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## **M E M O R A N D U M**

**TO:** John Mitnik, Chief, Engineering and Construction Bureau  
Paul Linton, Administrator, Water Control Operations Section

**FROM:** SFWMD Staff Environmental Advisory Team

**DATE:** July 21, 2015

**SUBJECT:** Weekly Environmental Conditions for Systems Operations

### **Summary**

Stages in Lakes East Toho and Toho have leveled off; Kissimmee-Cypress-Hatchineha (KCH) continues to rise; all have risen <0.5 feet in the last 14 days, staying within their ascension rate targets. On Sunday, discharge at S-65 was ~200 cfs and at S65A ~300 cfs. Discharge at S-65E averaged 600 cfs over the past week. Tuesday morning discharges: S65 ~70 cfs; S65A ~280 cfs; S65C ~560 cfs; S65E ~430 cfs. With reduced discharge, Kissimmee River dissolved oxygen concentration is recovering from a sag, averaging 4.90mg/L over the past week and 5.37 mg/L on Sunday. Kissimmee River floodplain water depth is declining with the reductions in discharge; mean floodplain depth is 0.42 feet on Monday.

Lake Okeechobee is at 11.95 feet NGVD, in the Beneficial Use Sub-band, within 0.4 feet of the water shortage management sub-band, and is continuing to recede steadily. Satellite imagery indicates low to moderately high bloom conditions persisting in the western and southwestern nearshore regions, with moderate bloom conditions in the north and northwest nearshore regions and a large area of moderate bloom conditions in the central pelagic zone. A bloom has also been reported by visual observation at the S-308 structure.

Over the past week, total freshwater inflow to both estuaries was dominated by local basin runoff, averaging 329 cfs to the St. Lucie and 2940 cfs to the Caloosahatchee. In the St. Lucie Estuary, salinity was in the good range for adult oysters. In the Caloosahatchee Estuary, salinity continued to be in the good range for adult oysters at Cape Coral and Shell Point and in the fair range at Sanibel. Salinities were also in the good range for tape grass in the upper-Caloosahatchee Estuary, and are forecasted to remain so over the next two weeks, even with no flow through S-79.

Rainfall was relatively high (one to three inches) across the Water Conservation Areas and most of Everglades National Park (ENP). Water levels remain below ground in northeastern WCA-3A and northeastern ENP. Additional inflow continues to be needed in far northeastern WCA-3A (near the southeastern corner of STA-3/4) to protect the peat soils, particularly with the summer heat. The 30-day moving average salinity at the Florida Bay Minimum Flows and Levels sentinel site increased to 34.9 psu. Salinities in the nearshore areas of Florida Bay remain hypersaline (greater than 40 psu) and exceed 50 psu in Florida Bay.

### **Weather Conditions and Forecast**

Below average rains through at least Thursday, then a wet weekend is likely. The atmosphere is relatively dry and stable over south Florida, so the seabreeze will struggle south of the Lake today. Higher moisture over central Florida should promote more showers/storms, but the overall pattern favors well below average rains for the next few days. Friday should be a transition day into a wet period as a trough over the east coast of the U.S. digs down into Florida with improved dynamics and moisture this weekend.

## **KISSIMMEE BASIN**

### **Kissimmee Basin Rainfall**

The Upper Kissimmee Basin received 1.12 inches of rainfall in the past week and the Lower Basin received 1.79 inches (SFWMD Daily Rainfall Report 7/20/2015).

### **Upper Kissimmee Basin**

Stages and departures in the Kissimmee Chain of Lakes (KCOL) are shown in Table1.

**Table 1.** Departures from KCOL flood regulation (F) or temporary schedules (T, A, or S) (feet NGVD). Discharge and stage data are provisional real-time data from SFWMD OASyS DualTrend; reported values are averages through midnight of the Sunday prior to the report date unless otherwise specified.

**Report Date: 7/21/2015**

Water Body	Structure/Site	Discharge (cfs), week's average**	Stage Monitoring Site***	Lake Stage (feet)	Schedule*	Regulation (R) or Target (S or T) Stage (feet)	Sunday Departure (feet)						
							7/19/15	7/12/15	7/5/15	6/28/15	6/21/15	6/14/15	6/7/15
Lakes Hart and Mary Jane	S62	133	LKMJ	60.0	R	60.0	0.0	0.0	-0.1	0.1	-0.1	-0.3	-0.5
Lakes Myrtle, Preston, and Joel	S57	65	S57	60.8	R	61.0	-0.2	0.0	-0.1	-0.1	-0.1	-0.5	-0.8
Alligator Chain	S60	0	ALLI	63.2	R	63.3	-0.1	-0.2	-0.2	0.0	-0.1	-0.5	-1.1
Lake Gentry	S63	0	LKGT	61.0	R	61.0	0.0	0.0	-0.1	0.0	-0.6	-1.1	-1.5
East Lake Toho	S59	132	TOHOE	56.0	R	56.5	-0.5	-0.5	-0.9	-0.9	-1.2	-1.2	-1.4
Lake Toho	S61	287	TOHOW	53.2	R	53.5	-0.3	-0.4	-0.6	-0.7	-1.0	-1.0	-1.4
Lakes Kissimmee, Cypress, and Hatchineha	S65	447	LKISSP, KUB011, LKISSB	50.0	R	51.0	-1.0	-1.2	-1.6	-1.8	-1.9	-1.9	-2.1

\* T = temporary schedule, R = USACE flood control schedule, S = temporary snail kite schedule, A = projected ascension line, N/A= not applicable or data not available.

\*\* Seven-day average of weighted daily means through Sunday midnight.

\*\*\* Names of in-lake monitoring sites and structures used to determine lake stage; if more than one site is listed, an average is reported.

### **Lower Kissimmee Basin**

Discharges and stages at Lower Basin structures are shown in Table 2. SFWDAT depth maps for the Phase I restoration area are shown in Figure 11. Kissimmee River floodplain stages at selected stations are shown in Figure 12.

**Table 2.** Mean weekly discharge at S-65x structures, and mean weekly Phase I area river channel dissolved oxygen and floodplain mean water depth. Discharge and stage data are provisional real-time data from SFWMD OASyS DualTrend; reported values are averages through midnight of the Sunday prior to the report date unless otherwise specified.

**Report Date: 7/21/2015**

Metric	Location	Sunday's 1-day average	Weekly Average**								
			7/19/15	7/12/15	7/5/15	6/28/15	6/21/15	6/14/15	6/7/15	5/31/15	5/24/15
Discharge (cfs)	S-65	232	447	513	314	352	395	423	392	421	421
Discharge (cfs)	S-65A	314	411	597	277	273	296	331	285	285	285
Discharge (cfs)	S-65C	646	762	958	430	435	478	533	390	450	450
Headwater stage (feet NGVD)		34.6	34.2	33.9	33.4	33.3	33.4	33.5	33.3	33.9	33.9
Discharge (cfs)	S-65D****	667	872	1076	480	515	588	628	454	558	558
Discharge (cfs)	S-65E	454	652	870	325	361	415	468	285	380	380
DO concentration (mg/L)***	Phase I river channel	5.37	4.90	5.15	7.26	8.09	7.24	5.81	6.27	6.35	6.36
Mean depth (feet)*	Phase I floodplain	0.47	N/A	0.68	0.22	0.19	0.25	0.33	0.12	0.14	0.23

\* 1-day spatial average from South Florida Water Depth Assessment Tool (SFWDAT).

\*\* Seven-day average of weighted daily means through Sunday midnight.

\*\*\* DO is the average of KRBN and PC62 through May 21, 2015; is for PC62 only for May 22-June 1; and is the average for PC62 and PC33 starting June 2..

\*\*\*\* S-65D discharge combines discharge at S-65D, S-65DX1, and S-65DX2

\*\*\*\*\* 1-day spatial average from field measurements in Pools A and BC

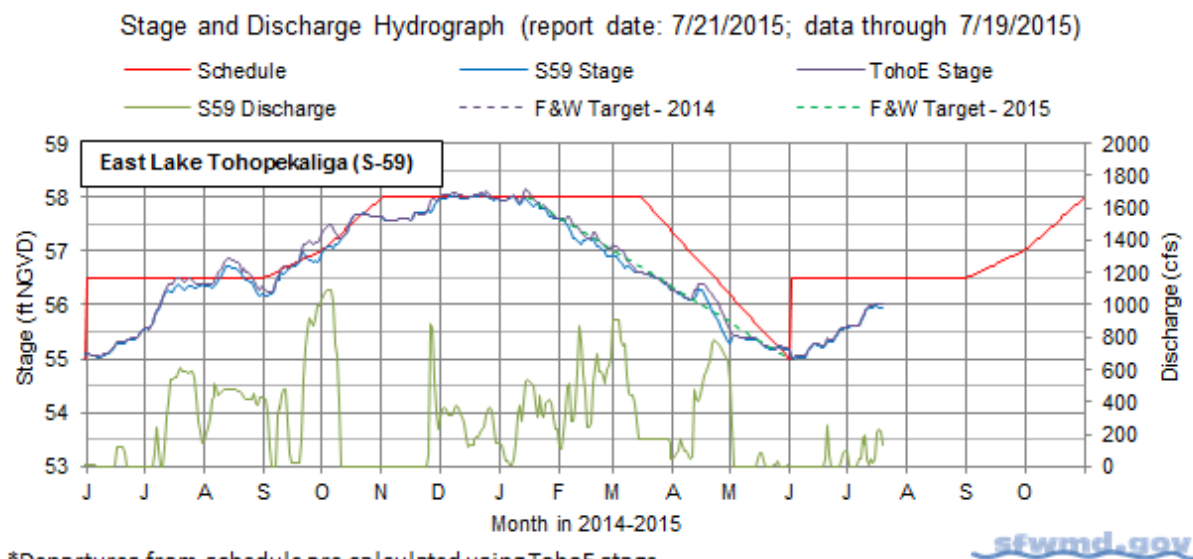
N/A Not applicable or data not available.

## Water Management Recommendations

### **Kissimmee Basin Recommendations and Operational Actions**

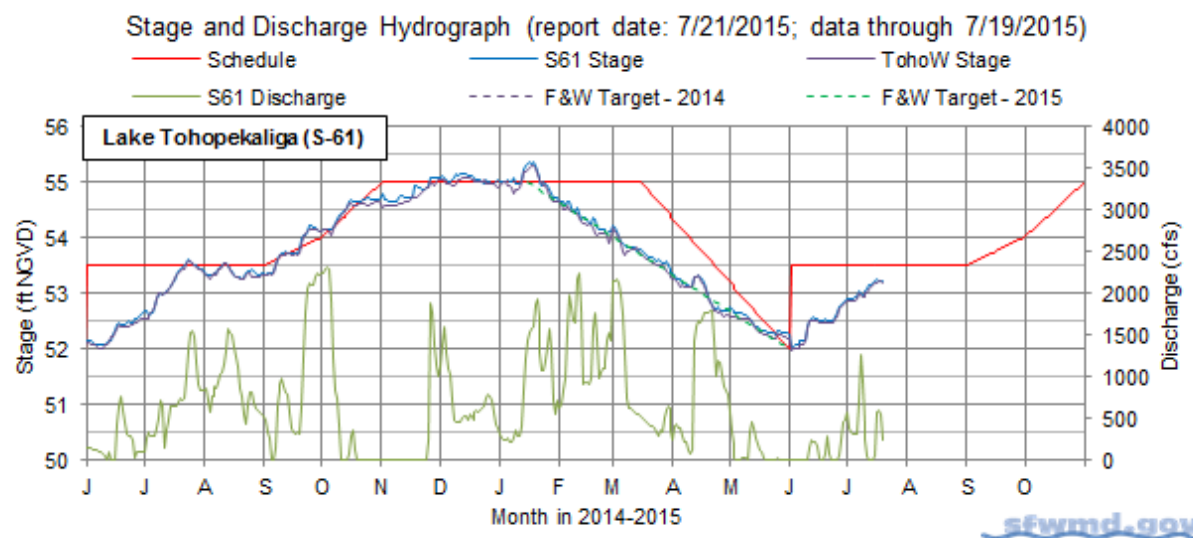
<b>Date</b>	<b>Recommendation</b>	<b>Purpose</b>	<b>Outcome</b>	<b>Source</b>
<b>7/21/2015</b>	No new recommendations.			
<b>7/14/2015</b>	No new recommendations.			
<b>6/30/2015</b>	No new recommendations.			
<b>6/23/2015</b>	No new recommendations.			
<b>6/16/2015</b>	No new recommendations.			
<b>6/9/2015</b>	No new recommendations.			
<b>6/1/2015</b>	For S65/65A maintain 300 cfs as long as stage is above 48.5 ft. When stage approaches 50.5 ft begin transitioning to 1400 cfs using the rampup/rampdown guidelines in standing recommendation.	Allow KCH lake stage to rise	Implemented	KB Operations
<b>5/29/2015</b>	2015 KB Wet Season Standing Recommendations provided to Operations Control	Comprehensive wet season guidance	Implemented	KB Operations
<b>5/26/2015</b>	No new recommendations.			
<b>5/19/2015</b>	No new recommendations.			
<b>5/12/2015</b>	No new recommendations.			
<b>5/5/2015</b>	No new recommendations.			
<b>4/7/2015</b>	No new recommendations.			
<b>3/31/2015</b>	No new recommendations.			
<b>3/24/2015</b>	No new recommendations.			
<b>3/17/2015</b>	No new recommendations.			
<b>3/9/2015</b>	No new recommendations.			
<b>3/4/2015</b>	No new recommendations.			
<b>2/23/2015</b>	No new recommendations.			
<b>2/17/2015</b>	No new recommendations.			
<b>2/10/2015</b>	No new recommendations.			
<b>2/3/2015</b>	No new recommendations.			
<b>1/27/2015</b>	Starting today, follow a new SK recession line for KCH, which will be drawn from today's stage to regulation stage on March 1.	Snail kite recession in KCH	Implemented	

## KCOL Hydrographs (through Sunday midnight)



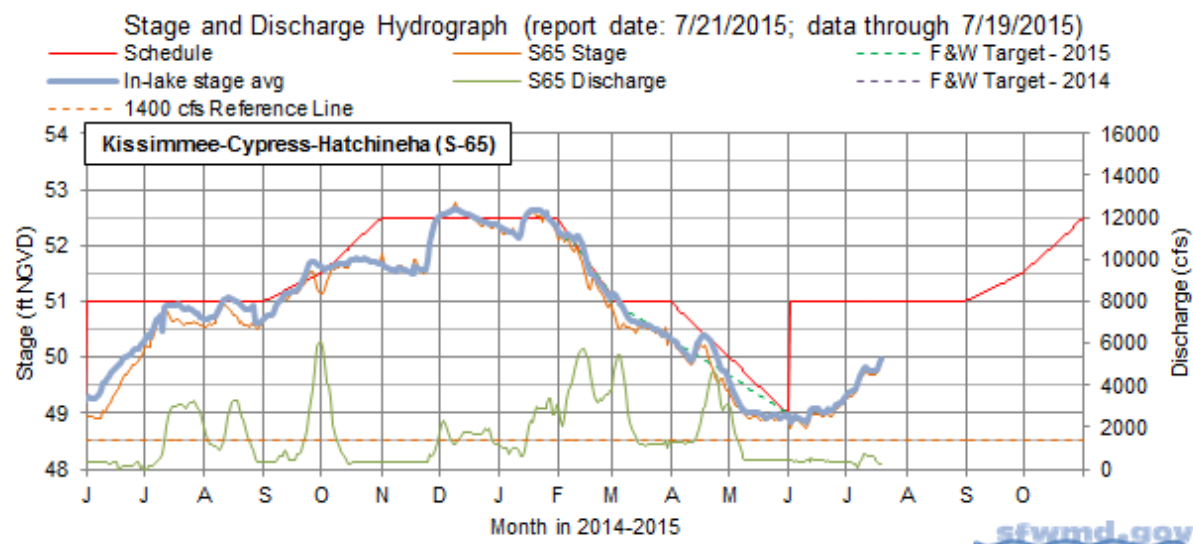
\*Departures from schedule are calculated using TohoE stage.

Figure 1.



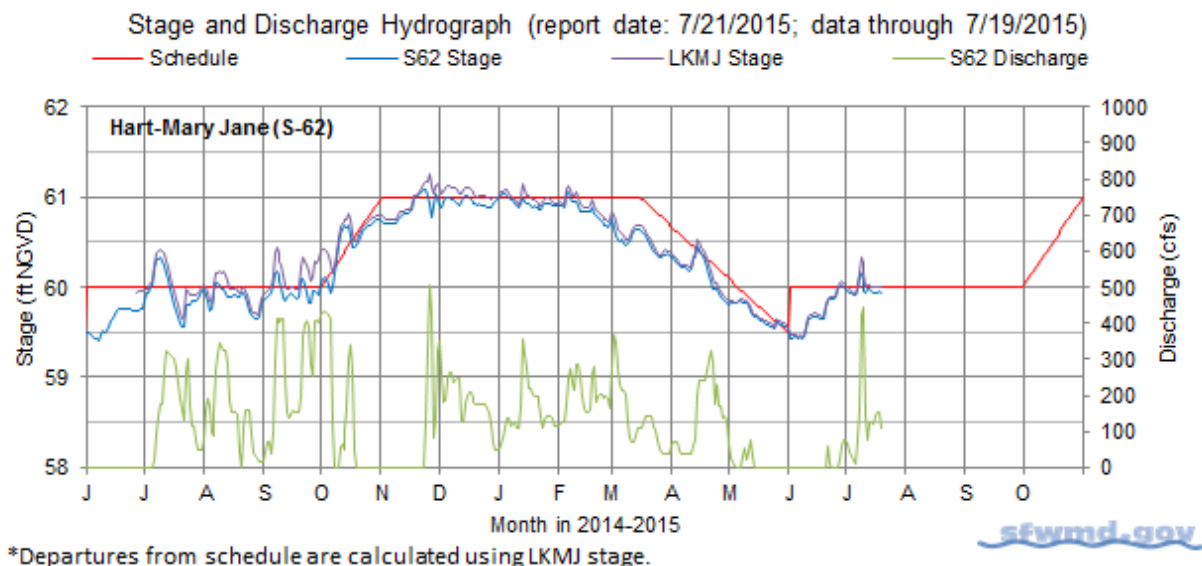
\*Departures from schedule are calculated using TohoW stage.

Figure 2.



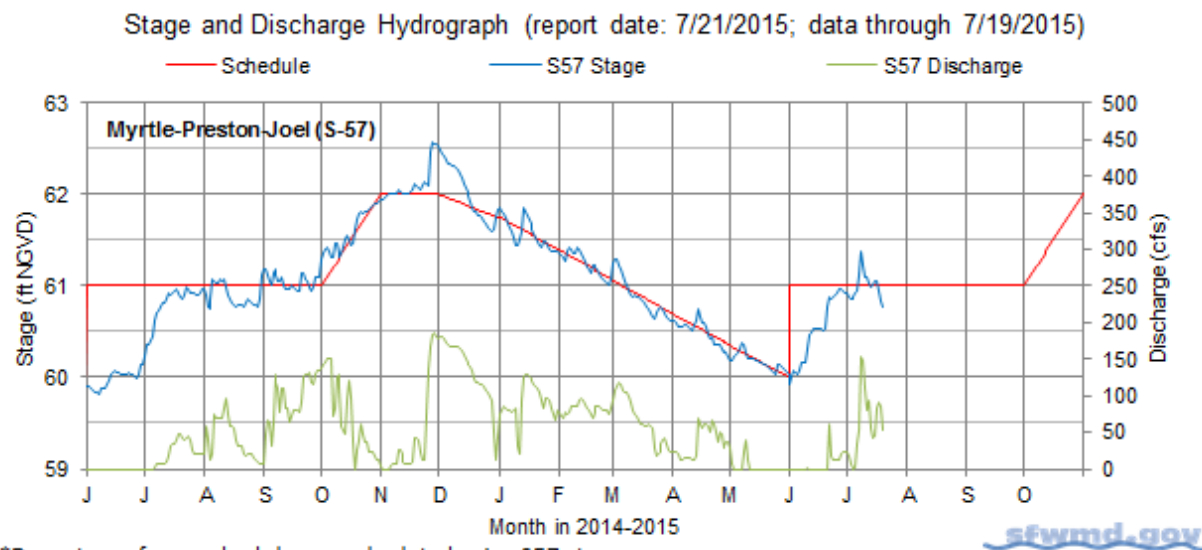
\*Schedule departures use In-lake stage avg (L KISS, KUB011, and LKIS5B).

Figure 3.



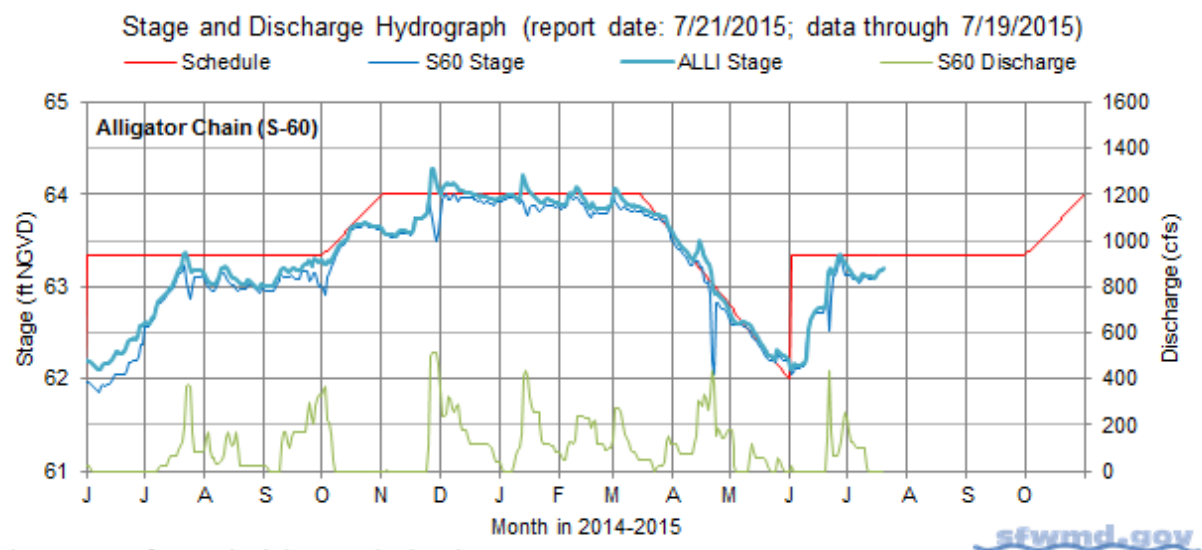
\*Departures from schedule are calculated using LKMJ stage.

Figure 4.



\*Departures from schedule are calculated using S57 stage.

Figure 5.



\*Departures from schedule are calculated using ALLI stage.

Figure 6.

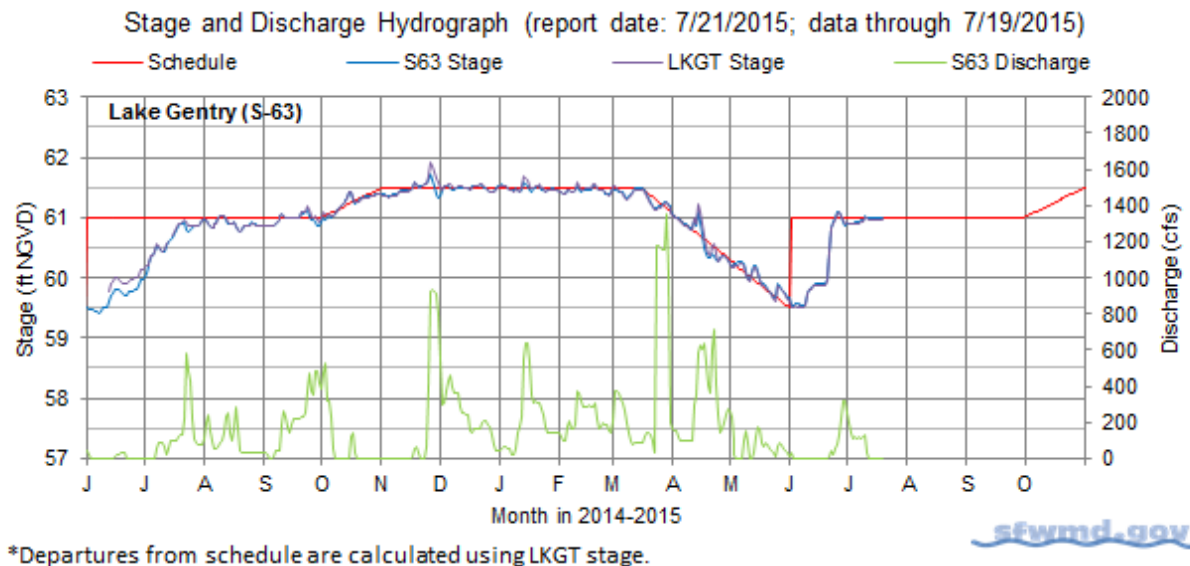


Figure 7.

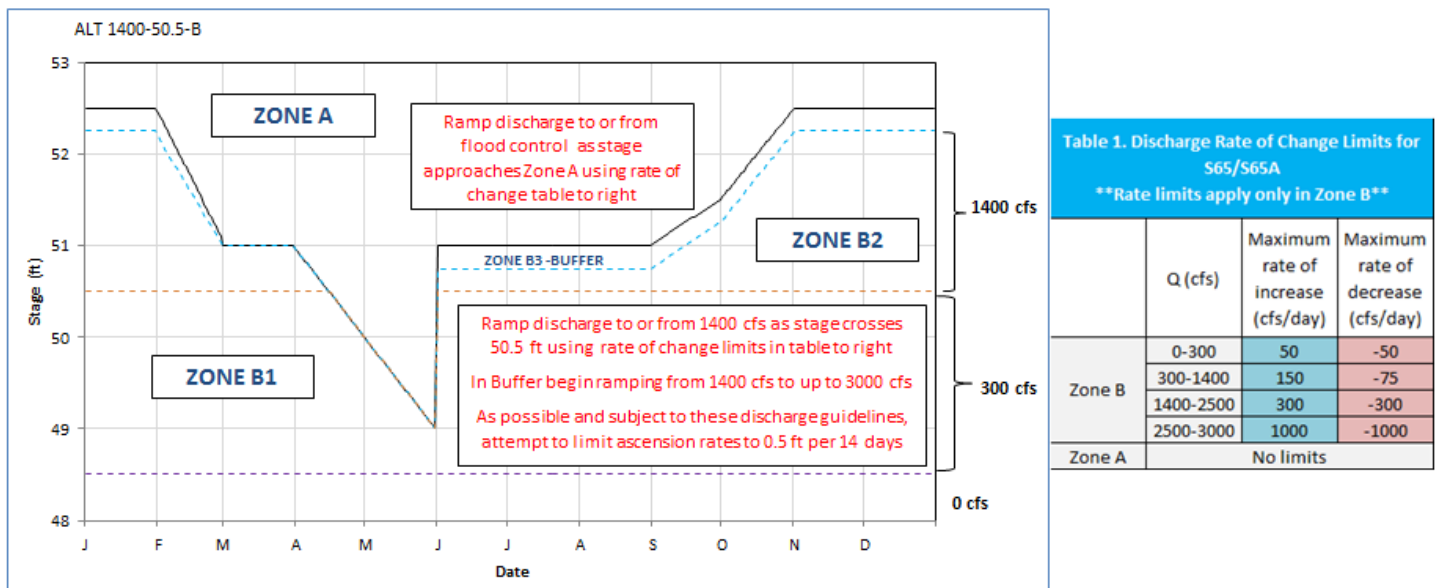
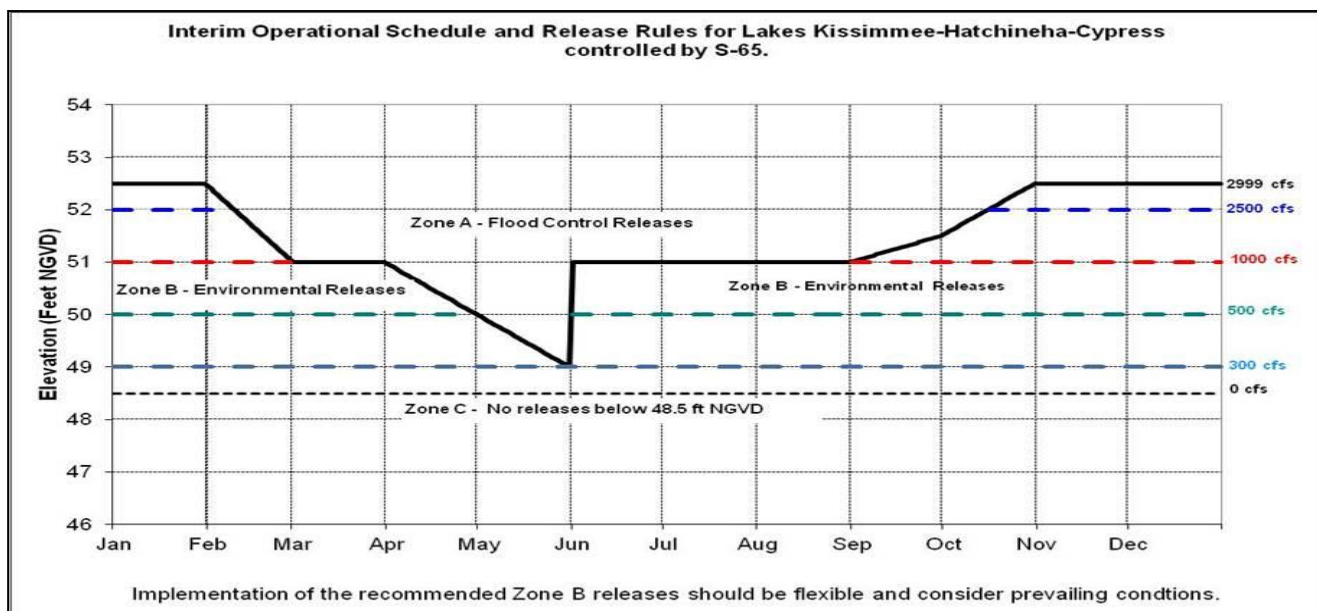
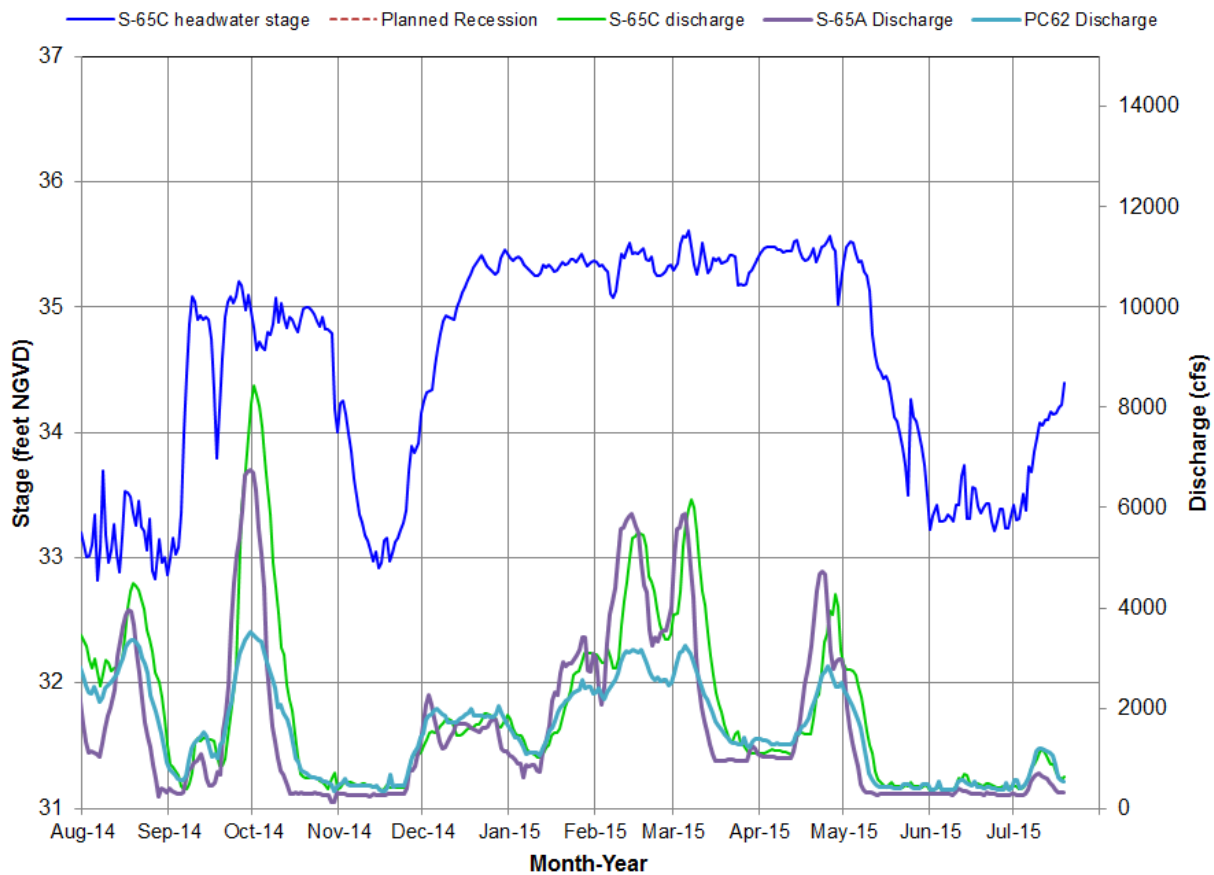


Figure 8a. Final S65 operational plan for Wet Season 2015.

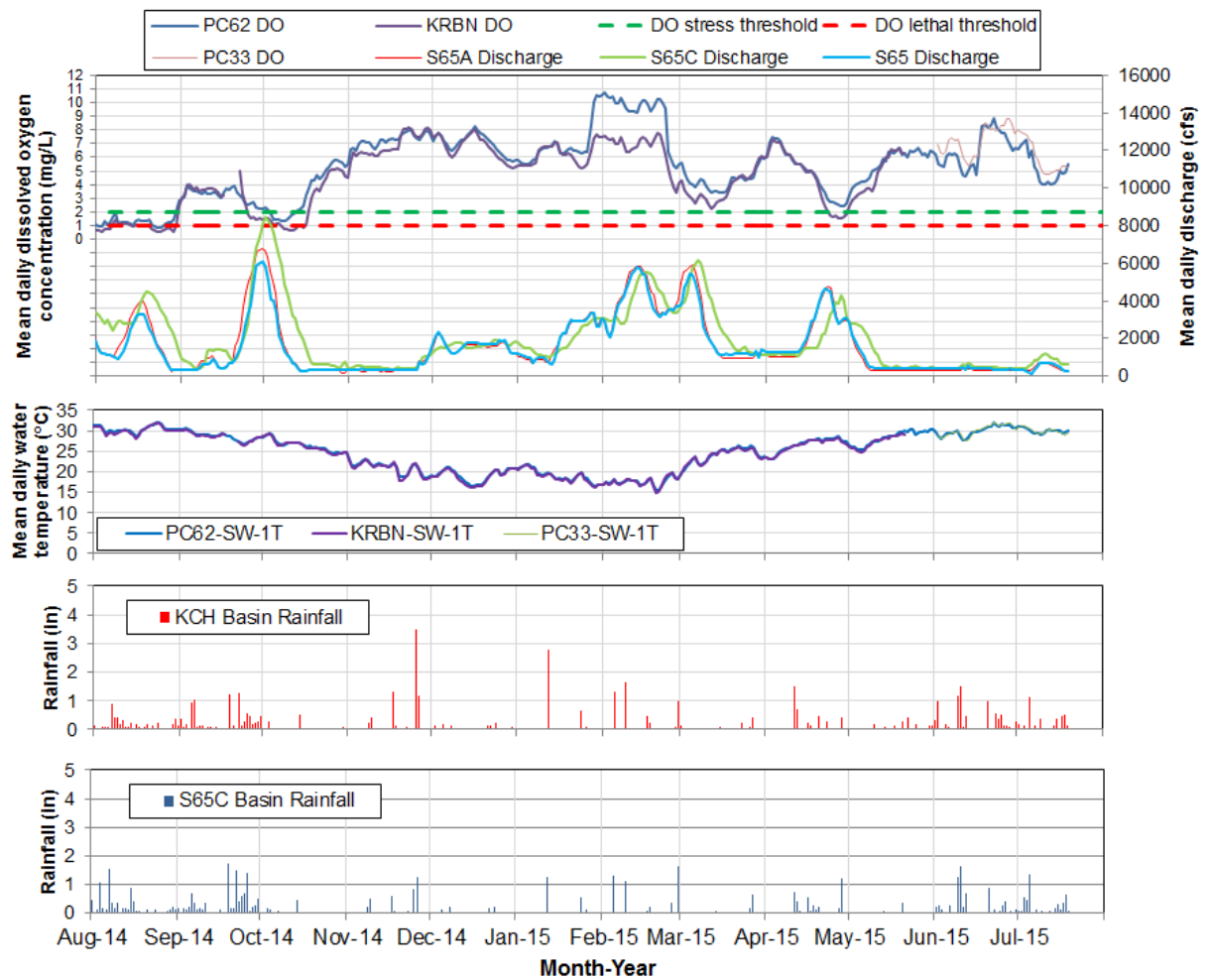




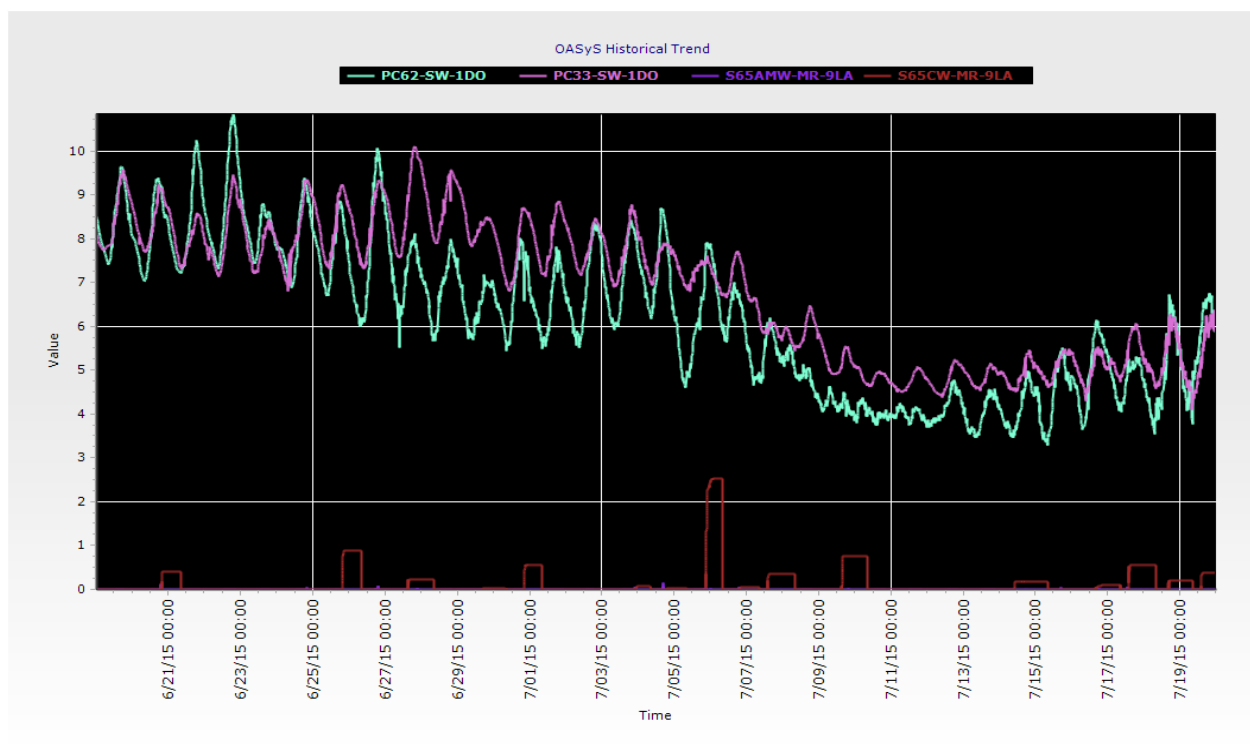
**Figure 8b.** Interim operations schedule for S-65. The discharge schedule shown to the right has not been used in recent years or in Wet Season 2015.



**Figure 9.** S-65C headwater stage in relation to discharge at S-65C, S-65A, and PC62.

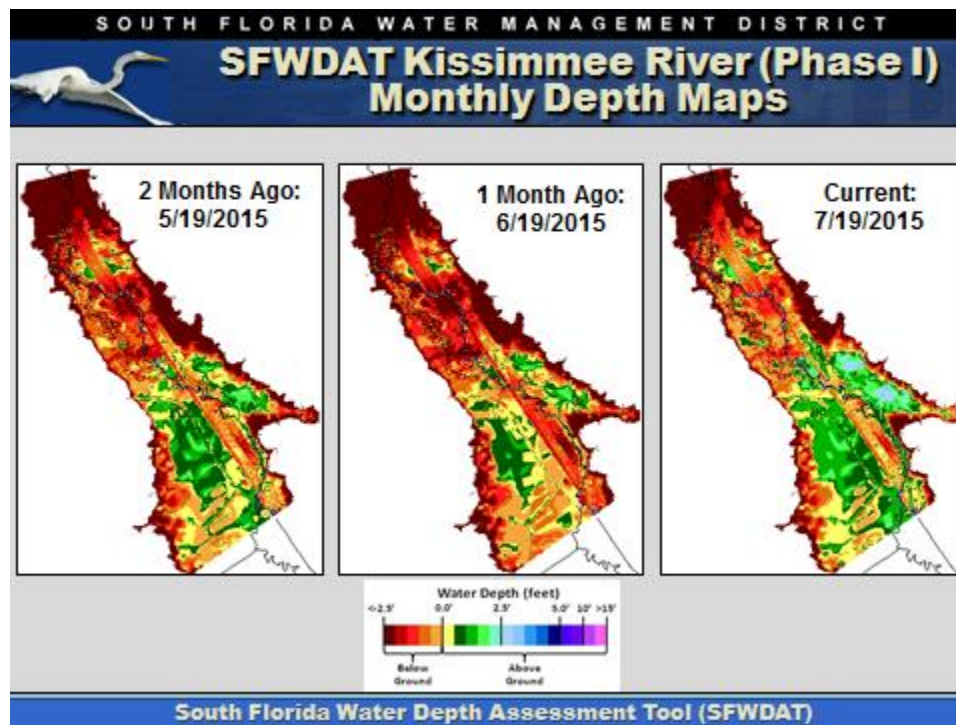


**Figure 10.** Mean daily DO, discharge, temperature and rainfall in the Phase I river channel.



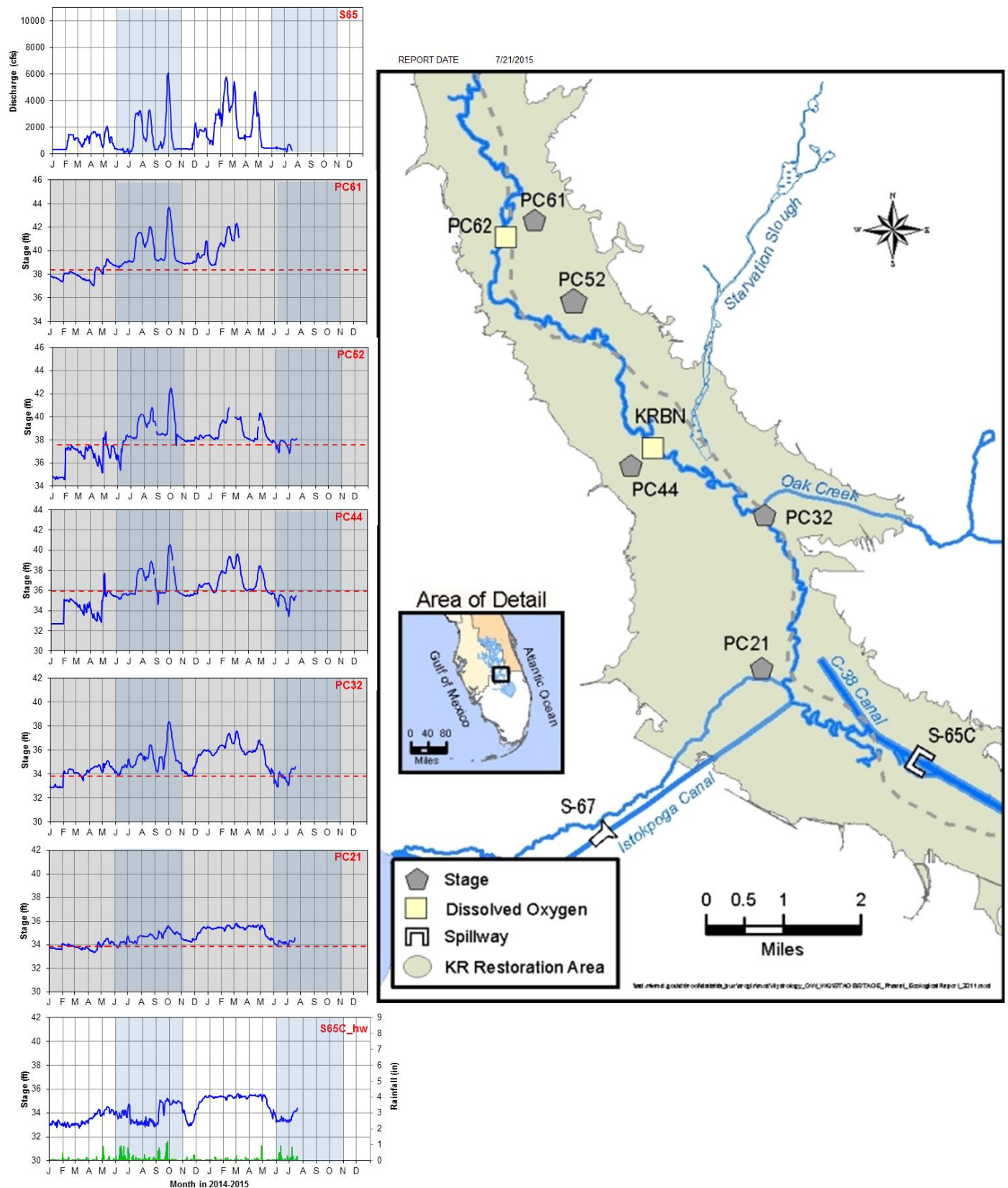
**Insert A.** Phase I river channel DO (measured at 15 minute intervals) and rainfall at S65A and S65C.





**Figure 11.** Phase I area floodplain water depths for this week, one month ago, and two months ago. Note that the WDAT color-coding has been modified to accommodate greater water depths; these maps are not directly comparable to Kissimmee Basin WDAT maps published prior to Jan. 16, 2012.

## Kissimmee River Hydrographs



**Figure 12.** Discharge at S65, stages at five monitoring stations in the Phase I area of the Kissimmee River floodplain, and headwater stage at S65-C since January 1, 2013. The most recent data (~2 weeks) are provisional real-time data from SFWMD DualTrend; previous data are from SFWMD DB-HYDRO (validated). Dashed lines are ground elevations.

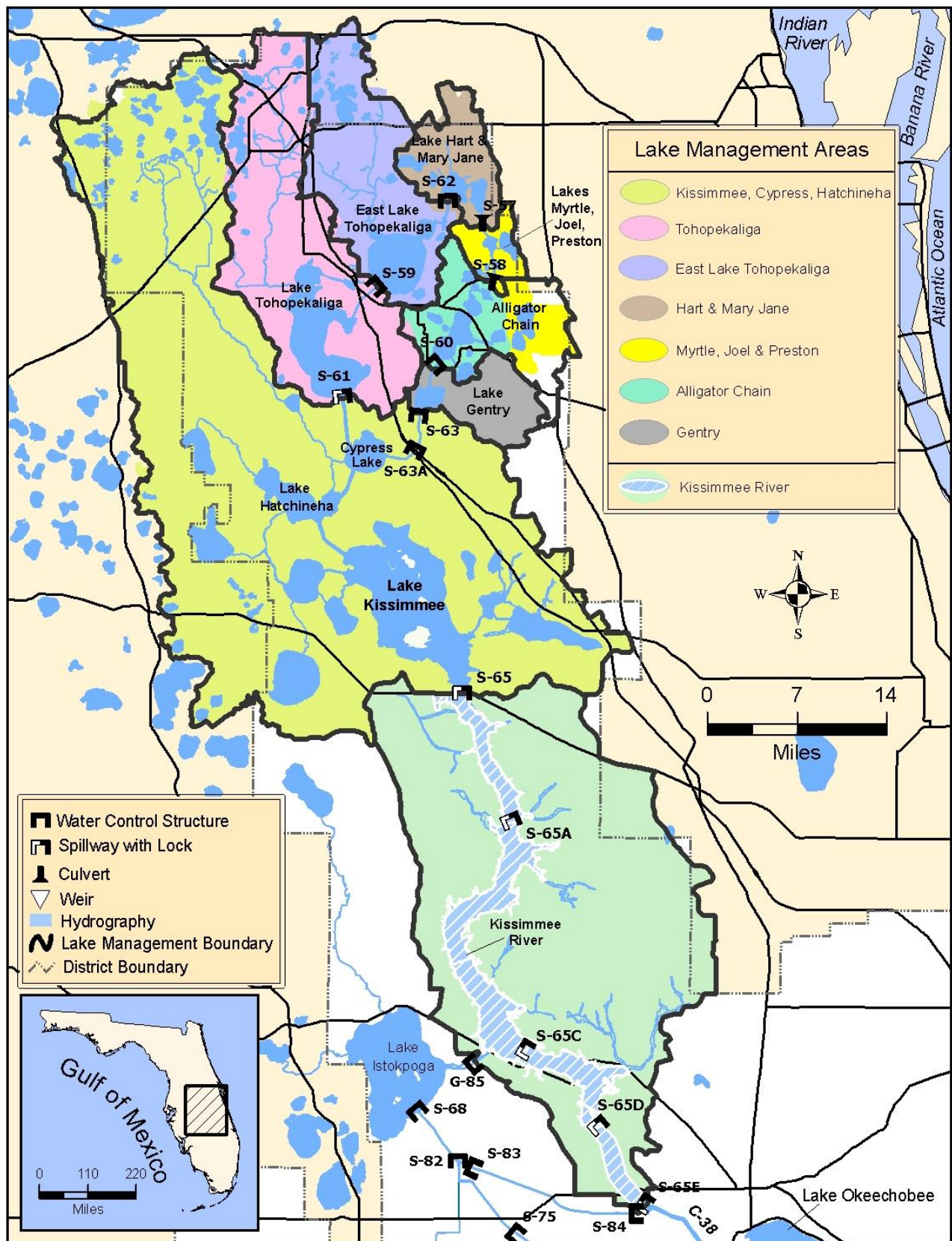


Figure 13. The Kissimmee Basin.



## **LAKE OKEECHOBEE**

According to the SFWMD web site, Lake Okeechobee stage is at 11.95 feet NGVD. There was a net decrease in Lake stage of 0.10 feet over the past seven days. The Lake is now 0.52 feet lower than it was a month ago and 1.71 feet lower than it was a year ago (Figure 1). The Lake is in the Beneficial Use Sub-band and within 0.4 feet of the top of the water shortage management sub-band (Figure 2). According to RAINДАР, 1.27 inches of rain fell directly over the Lake during the past seven days. Similar or greater amounts fell in most of the surrounding watershed (Figure 3).

Based on USACE reported values, current Lake inflow is approximately 2383 cfs consisting of flows as indicated below.

<b>Structure</b>	<b>Flow cfs</b>
S65E	747
S154	0
S84 & 84X	1151
S71	0
S72	0
C5	0.
S191	0
S133 PUMPS	0
S127 PUMPS	0
S129 PUMPS	0
S131 PUMPS	0
S135 PUMPS	0
Fisheating Creek	485
S2 Pumps	0
S3 Pumps	0
S4 Pumps	0

Outflows from the Lake consist of 604 cfs exiting at S-351 and S-352 (S-354 is not reporting). There is no reported flow through S-77 or S-308. The L8 is reporting a backflow of 162 cfs. Corrected average weekly evapotranspiration was 3278 cfs. Change in elevation equivalents and average weekly flows for major structures are presented in Figure 4.

The most recent MODIS satellite images (July 10 and 14) indicate an extensive distribution of low to moderate potential bloom conditions along much of the northern, western, and southern nearshore zone with more intense bloom conditions in the southeastern nearshore zone and moderate bloom conditions in much of the central pelagic zone. District staff reported a bloom at the S-308 structure yesterday. Sampling has been conducted but results are not yet available.

## **Water Management Recommendations**

The Lake continues to recede and is now below the optimal Lake stage for this time of year. Future recommendations for the short term will depend in large measure on wet season rainfall patterns and amounts. However, operations that increase inflows and restrict discharges are favored at this time; the operational goal being to maintain a steady change in Lake stage not to exceed 0.5 feet per month. If the current recession continues for an extended period of time then a variety of negative impacts ranging from the loss of apple snail and fish habitat to the potential for the expansion of cattail, torpedograss and upland woody vegetation (both native and exotic) will become a concern.

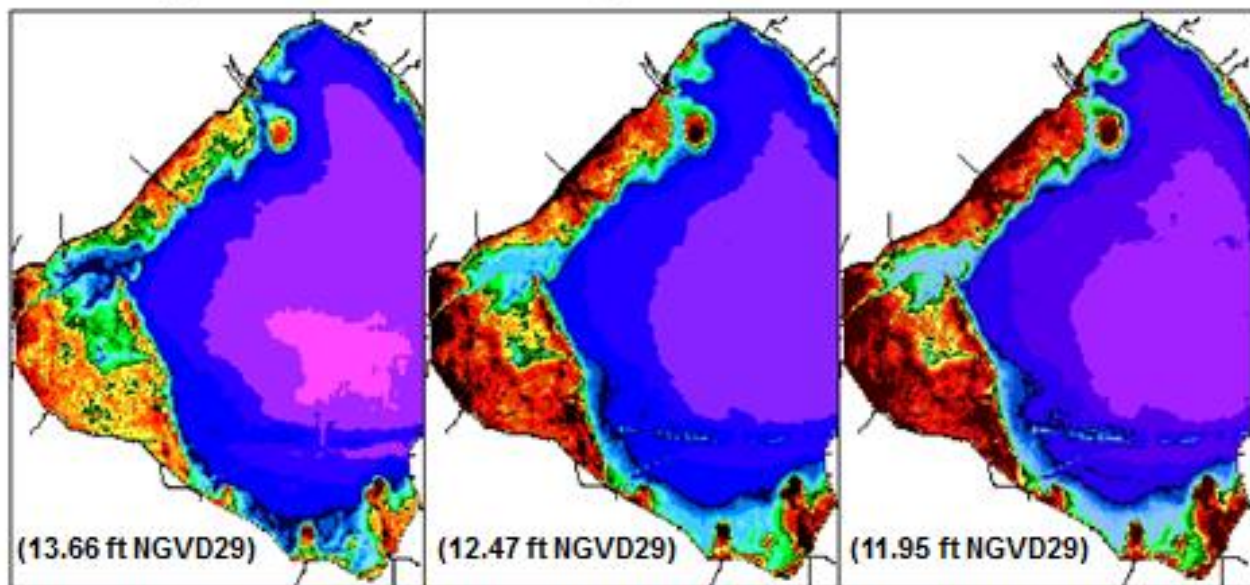
# Lake Okeechobee

## Water Depth Timeseries Maps

1 Year Ago: 07/20/2014

1 Month Ago: 06/20/2015

Current: 07/21/2015



Source of Lake Graphic: Water Depth  
Assessment Tool (SFWDAT)  
Source of Lake Stage Value:  
USACE/SFWMD Official Stage Value

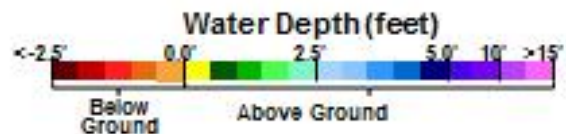


Figure 1

## Lake Okeechobee Water Level History and Projected Stages

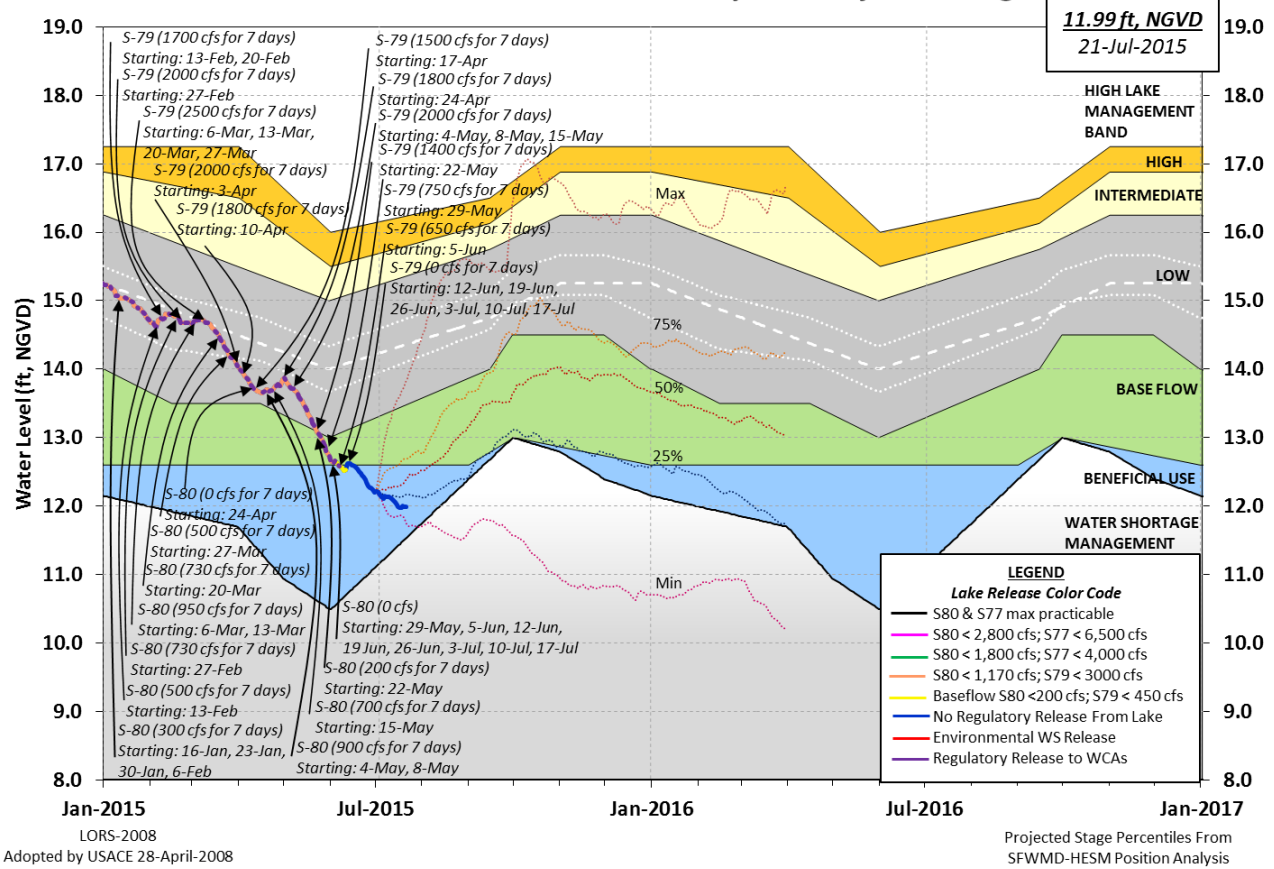


Figure 2



# SFWMD PROVISIONAL RAINDAR 7-DAY BASIN RAINFALL ESTIMATES

FROM: 0515 EST, 07/14/2015 THROUGH: 0515 EST, 07/21/2015

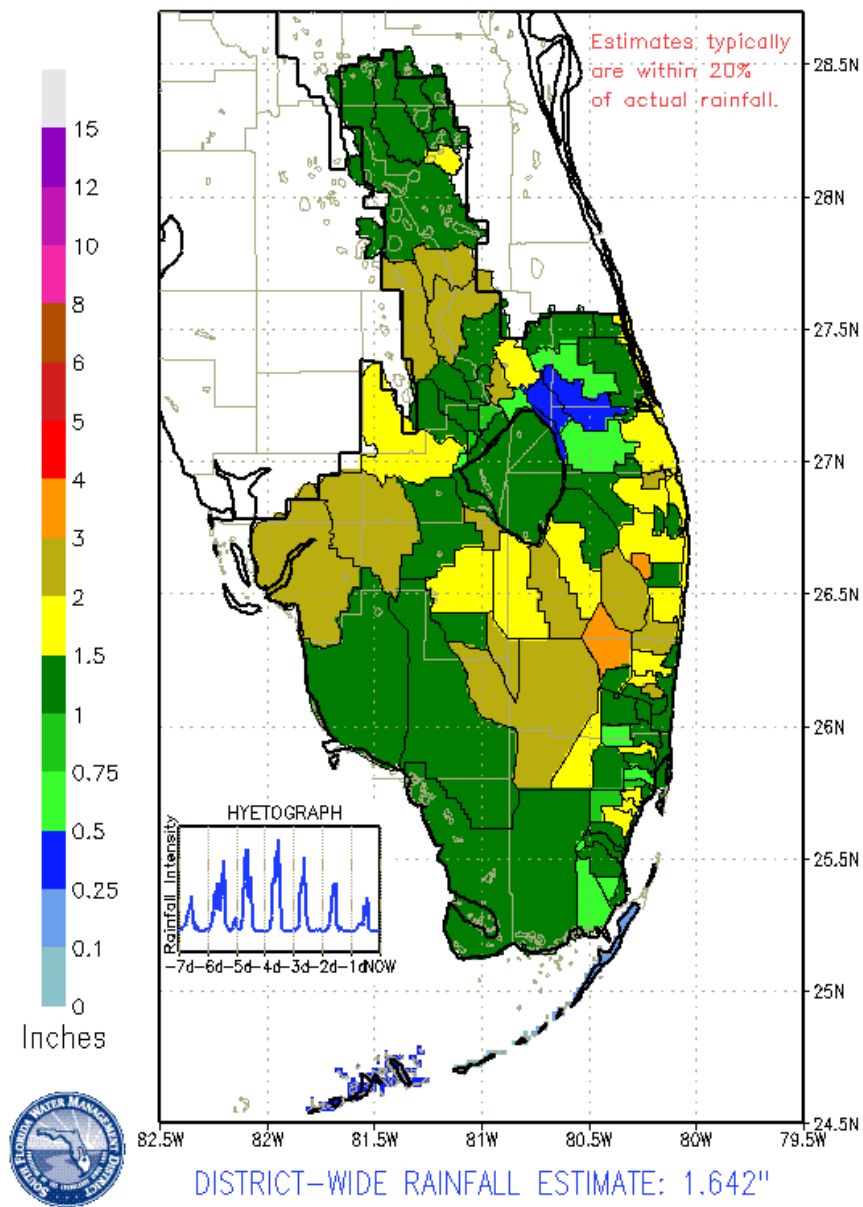


Figure 3

INFLOWS	Average Daily Flow Past Week cfs	Feet of Change Past Week
S65E	621	0.024
S71 & 72	0	0.003
S84 & 84X	621	0.015
Fisheating Creek	509	0.020
Rainfall	N.A.	0.106
OUTFLOWS	Average Daily Flow Past Week cfs	Feet of Change Past Week
S77	111	0.004
S308	0	0.000
S351	628	0.024
S352	657	0.025
S354	571	0.022
L8	-162	-0.006
ET	3278	0.127

Figure 4

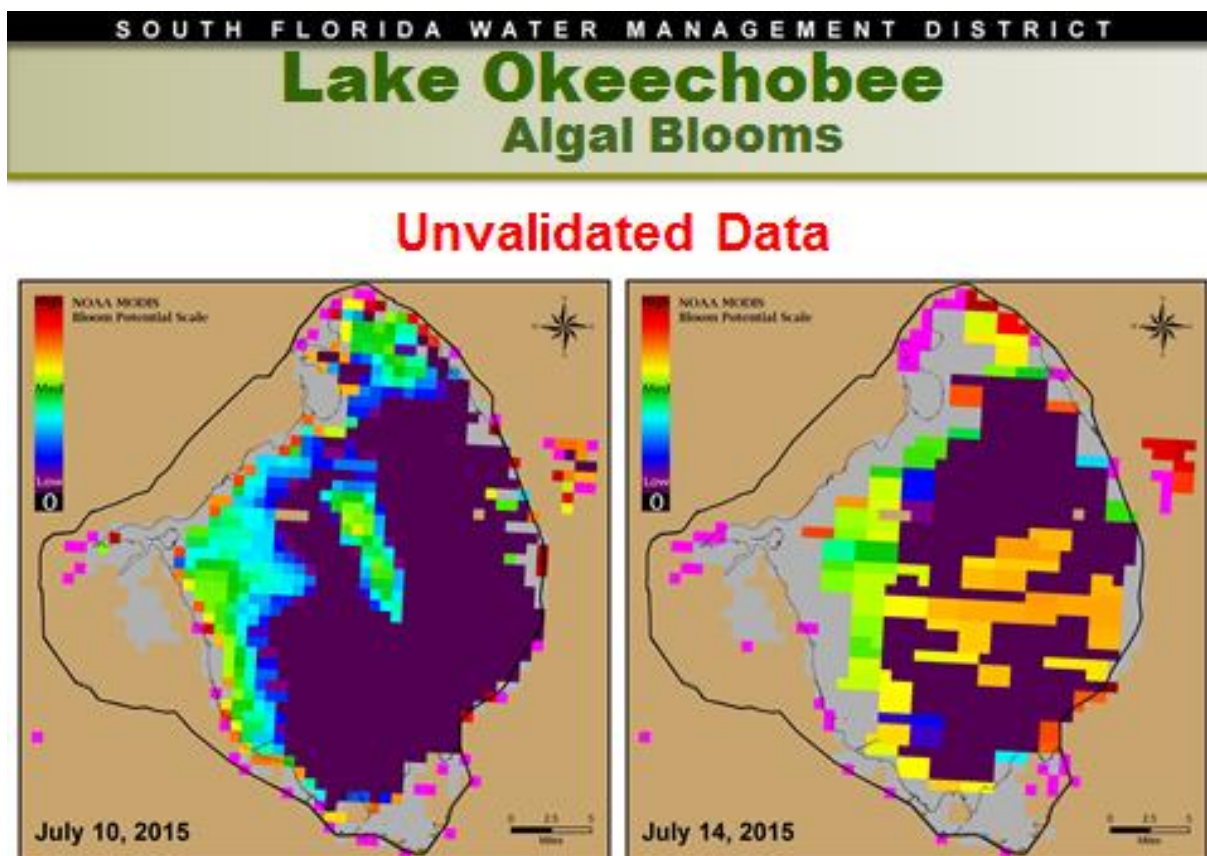


Figure 5

Lake Istokpoga

Lake Istokpoga stage is 38.35 feet NGVD today. It is currently 0.10 feet above its regulation schedule (38.25 feet NGVD) (Figure 6). Average flows into the Lake from Arbuckle and Josephine creeks were 82 and 163 cfs respectively, an increase from last week. Average discharge from S-68 and S-68X this past week was 507 cfs, a small decrease from the preceding week. According to RAINDAR, 2.50 inches of rain fell in the Lake Istokpoga watershed during the past seven days, a large increase over the previous week.

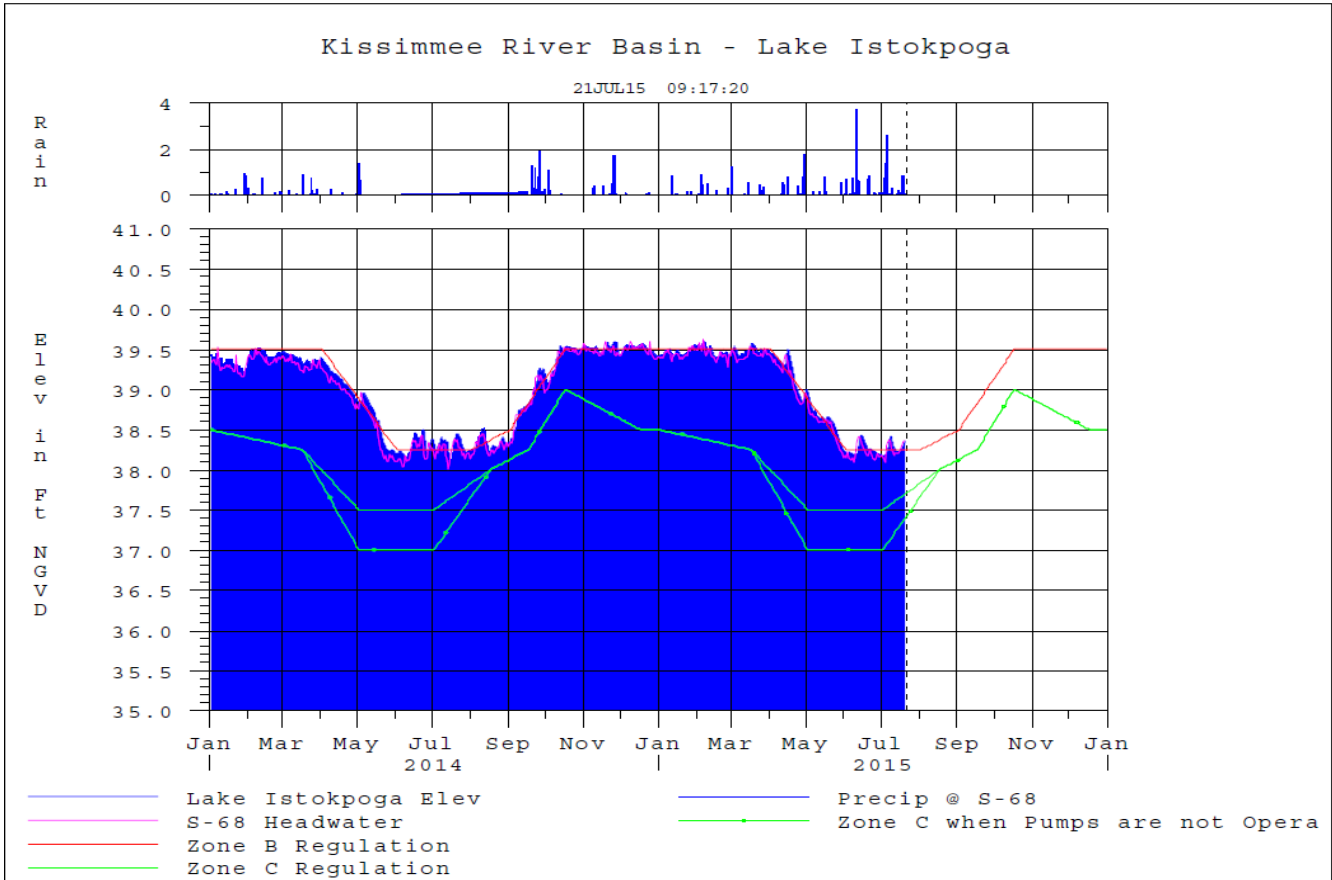


Figure 6

ESTUARIES

St. Lucie Estuary

Over the past week, provisional flows averaged 0 cfs at S-80, 0 cfs at S-308, 10 cfs at S-49 on C-24, 0 cfs at S-97 on C-23, and 75 cfs from Ten Mile Creek at the Gordy Road Structure. Average inflow from tidal basin tributaries is estimated to be 244 cfs (Figures 1 and 2). Total inflow averaged 329 cfs last week and 344 cfs over last month.

Over the past week, salinity remained about the same throughout the estuary (Table 1, Figures 3 and 4). The seven-day moving average salinity of the water column at the US1 Bridge is 20.8. Salinity conditions in the middle estuary are in the good range for the adult eastern oyster.

Table 1. Seven-day average salinity at three monitoring stations in the St. Lucie Estuary. Current average is in bold face type, previous average in parentheses. The envelope reflects the preferred salinity range for adult eastern oysters (*Crassostrea virginica*) in the middle estuary.

Sampling Site	Surface	Bottom	Envelope
HR1 (N. Fork)	<b>~16.0</b> (~16)	<b>NR</b> (NR)	NA <sup>1</sup>
US1 Bridge	<b>19.7</b> (20.1)	<b>21.9</b> (22.3)	10.0-26.0
A1A Bridge	<b>27.3</b> (27.6)	<b>30.6</b> (31.0)	NA

<sup>1</sup>Envelope not applicable

### Caloosahatchee Estuary

During the past week, provisional flows averaged approximately 65 cfs at S-77, 67 cfs at S-78, and 1233 cfs at S-79. Average inflow from tidal basin tributaries is estimated to be 1707 cfs (Figures 5 and 6). Total inflow averaged 2940 cfs last week and 2297 cfs over last month.

Over the past week, salinity changed slightly in the estuary (Table 2, Figures 7 and 8). The seven-day average salinity values are within the good range for oysters at Cape Coral, Shell Point, but in the fair range at Sanibel (Figure 9). The 30-day moving average surface salinity is 0.8 at Val I-75 and 4.3 at Ft. Myers. Salinity conditions at Val I-75 are in the good range for tape grass.

Table 2. Seven-day average salinity at six monitoring stations in the Caloosahatchee Estuary. Current average is in bold face type, previous average in parentheses. The envelope reflects the preferred salinity range for tape grass (*Vallisneria americana*) at Val I-75 and for adult eastern oysters (*Crassostrea virginica*) elsewhere.

Sampling Site	Surface	Bottom	Envelope
S-79 (Franklin Lock)	<b>0.3</b> (0.3)	<b>0.3</b> (0.3)	NA <sup>1</sup>
*Val I75	<b>0.7*</b> (0.7*)	<b>1.2*</b> (1.3*)	0.0-5.0 <sup>2</sup>
Ft. Myers Yacht Basin	<b>3.7</b> (3.7)	<b>4.4</b> (5.7)	NA
Cape Coral	<b>11.4</b> (10.3)	<b>12.9</b> (12.7)	10.0-30.0
Shell Point	<b>24.7</b> (23.8)	<b>25.3</b> (24.8)	10.0-30.0
Sanibel	<b>29.8</b> (30.4)	<b>31.5</b> (32.1)	10.0-30.0

<sup>1</sup>Envelope not applicable, <sup>2</sup>Envelope is based on a 30-day average.

\*Val I75 is temporarily offline due to bridge construction.

Salinity values are estimated using models developed for the site.

Salinity forecasts during the next two weeks were constructed for the following scenarios: a) no release (Figure 10), b) 100 cfs, c) 300 cfs, and d) 450 cfs pulse release. There are increased rainfall events expected with a predicted tidal basin runoff of 1093 cfs. By August 3, 2015, the predicted daily salinity at the Val I75 location would be 1.5, 1.3, 0.9 and 0.7 for the four cases, respectively. And the 30-day moving average salinity is predicted to be 0.8, 0.7, 0.7 and 0.6, respectively.

Monitoring data collected by the River, Estuary and Coastal Observing Network of Sanibel-Captiva Conservation Foundation using continuous sensors are summarized in Table 3 as concentration ranges of Chlorophyll *a* and dissolved oxygen at Beautiful Island, Ft. Myers, and Shell Point in the Caloosahatchee Estuary.

Table 3. Weekly ranges of Chlorophyll *a* (a measure of algal biomass) and dissolved oxygen concentrations at three monitoring stations maintained by the Sanibel-Captiva Conservation Foundation.

	RECON Monitoring Stations		
	Beautiful Island	Ft. Myers	Shell Point
Chlorophyll <i>a</i> (µg/l)	NA	NA	1.8 – 7.8



Dissolved Oxygen (mg/l)	NA	NA	3.2 – 7.6
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The Florida Fish and Wildlife Research Institute reported on July 17, 2015, that *Karenia brevis*, the Florida red tide organism, was not detected in samples collected this week in, or alongshore of, Pinellas, Manatee, Sarasota, Charlotte, or Lee counties.

### **Water Management Recommendations**

Lake Okeechobee's water level is within the Beneficial Use Sub-band; the tributary hydrological conditions are Dry; and the seasonal and multi-seasonal forecasts are Very Wet and Wet, respectively. The current and forecasted 30-day average salinity at the Val-I75 site are below the 5 psu threshold within the next two weeks. The Lake Okeechobee Regulation Schedule (LORS) and Lake Okeechobee Adaptive Protocols (LOAP) prescribe no Lake releases at either S-80 or S-77.

Currently, the USACE is not releasing water from Lake Okeechobee to the Caloosahatchee and St. Lucie estuaries. Local basin runoff is maintaining salinity within the preferred ranges of oysters and submerged aquatic vegetation in both estuaries. There are no ecological benefits associated with additional releases from Lake Okeechobee.

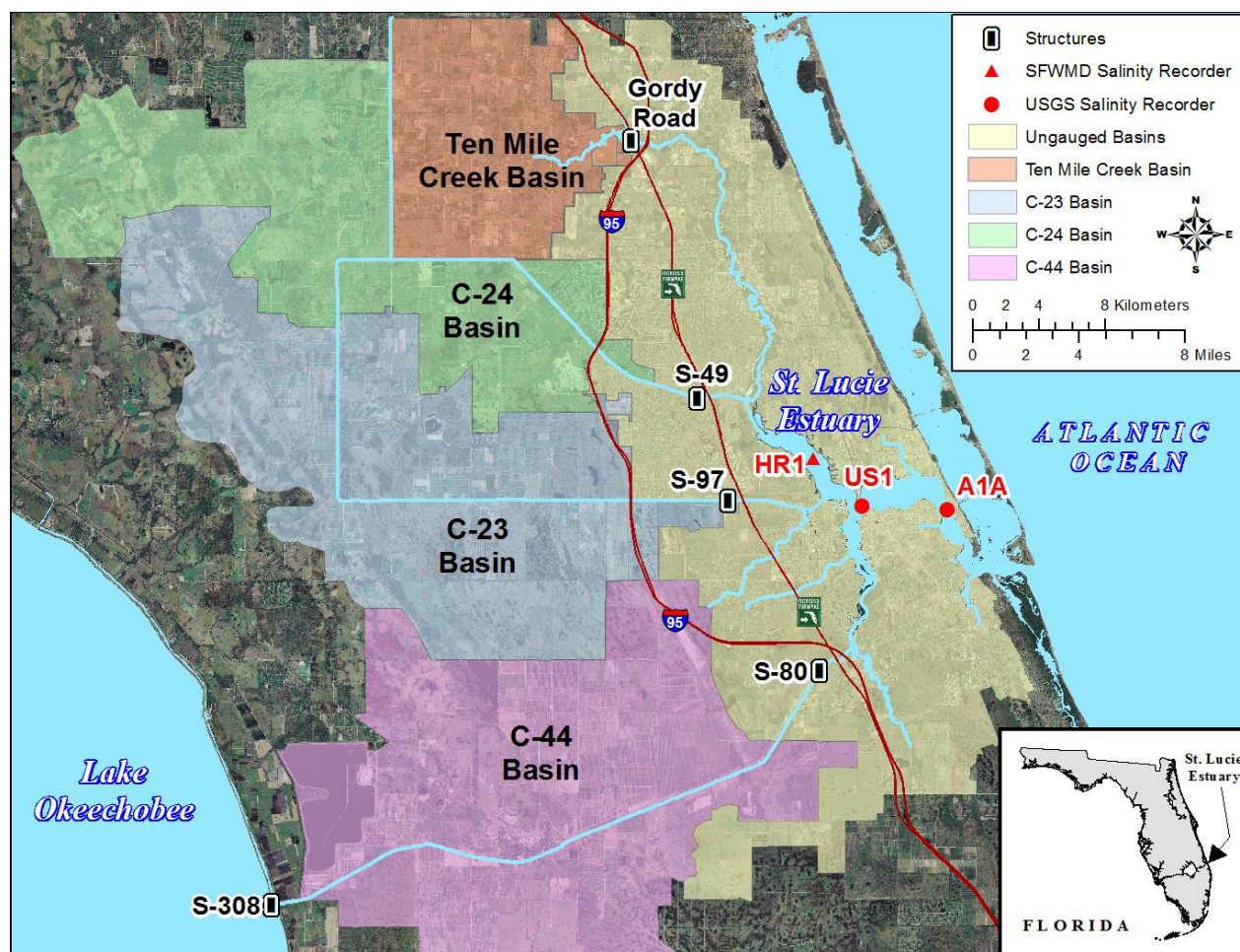


Figure 1. Basins, water control structures, and salinity monitoring for the St. Lucie Estuary.

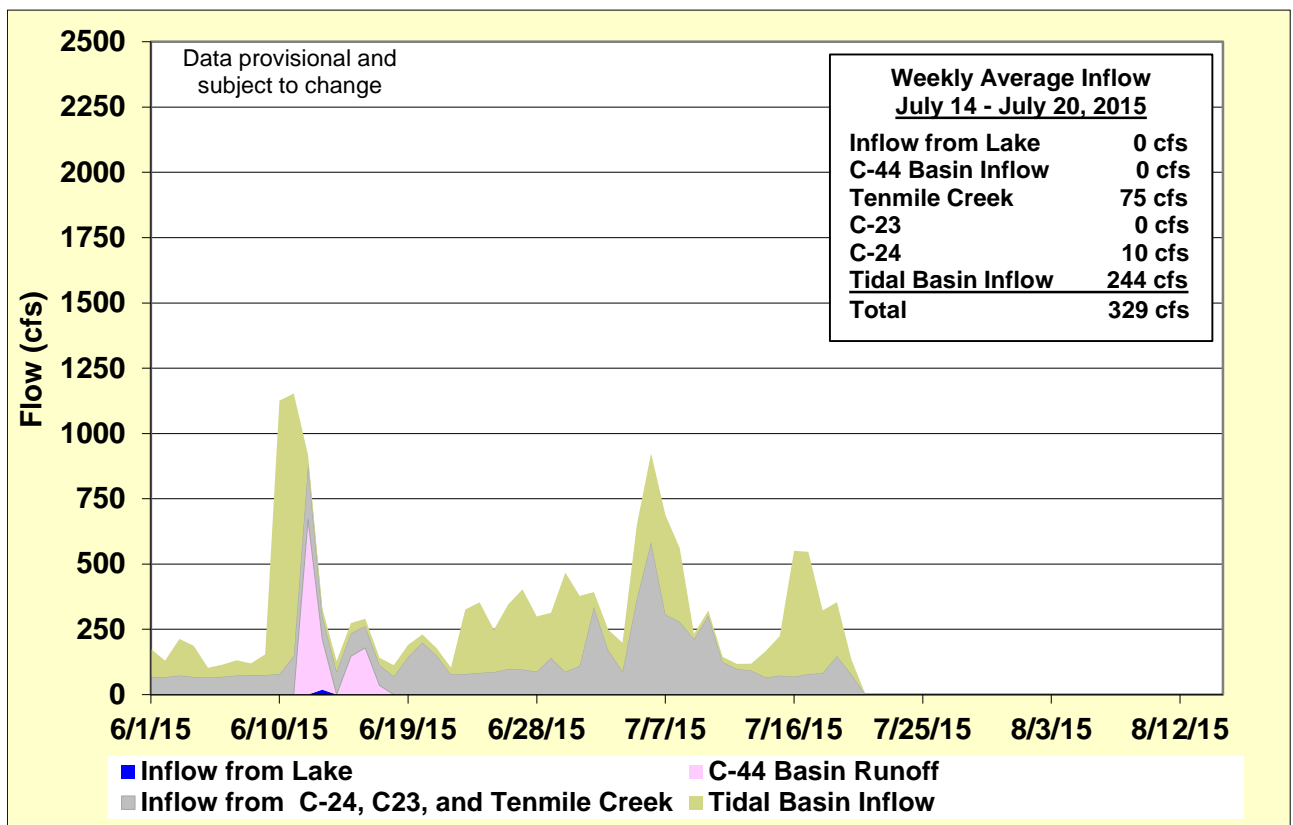


Figure 2. Estimated surface freshwater inflows from Lake Okeechobee and runoff from the C-44, C-23, C-24, Ten Mile Creek, and tidal basins into the St. Lucie Estuary.

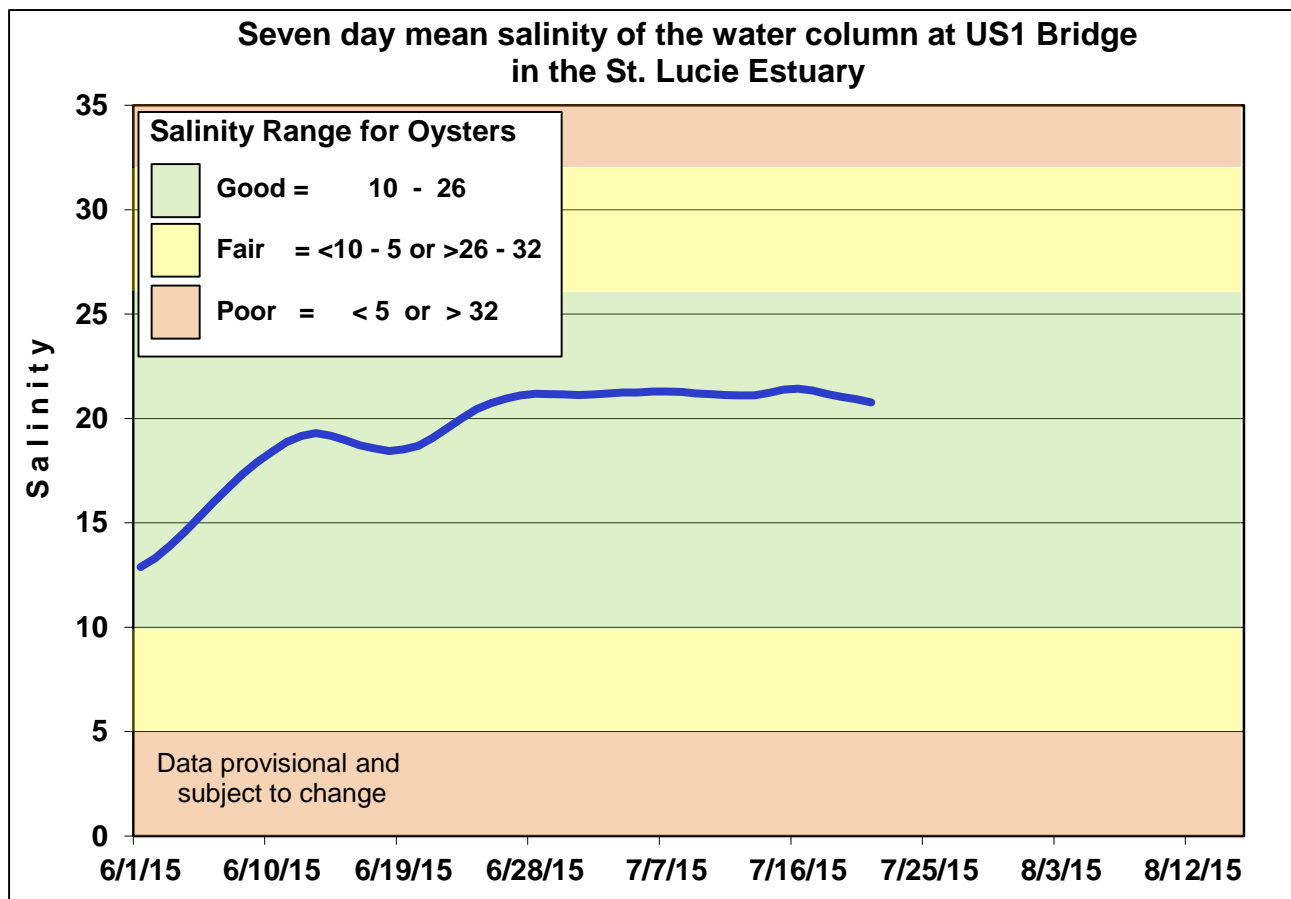


Figure 3. Seven-day mean salinity of the water column at the U.S. Highway 1 Bridge.



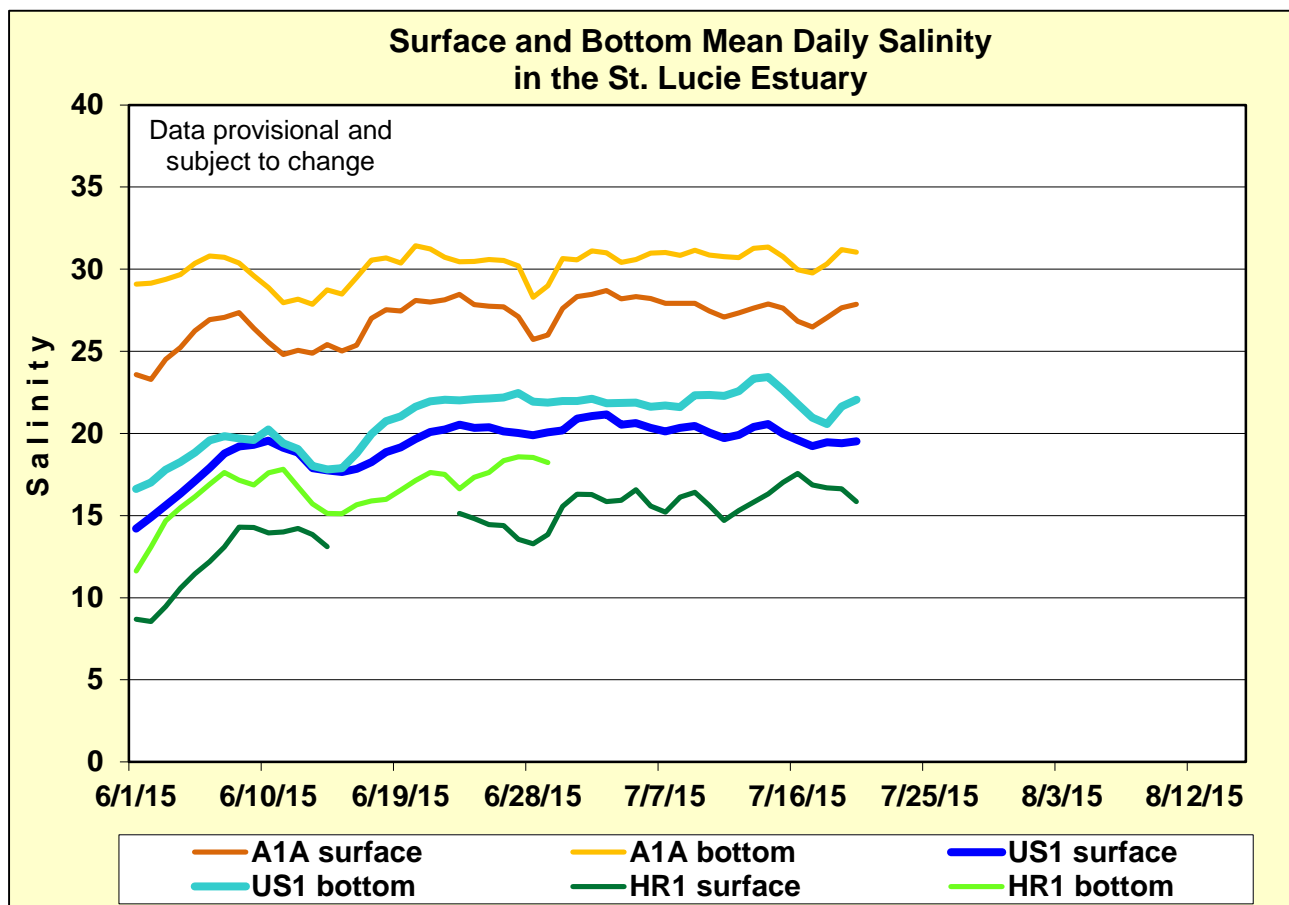


Figure 4. Daily mean salinity at the A1A, US1 and HR1 stations.

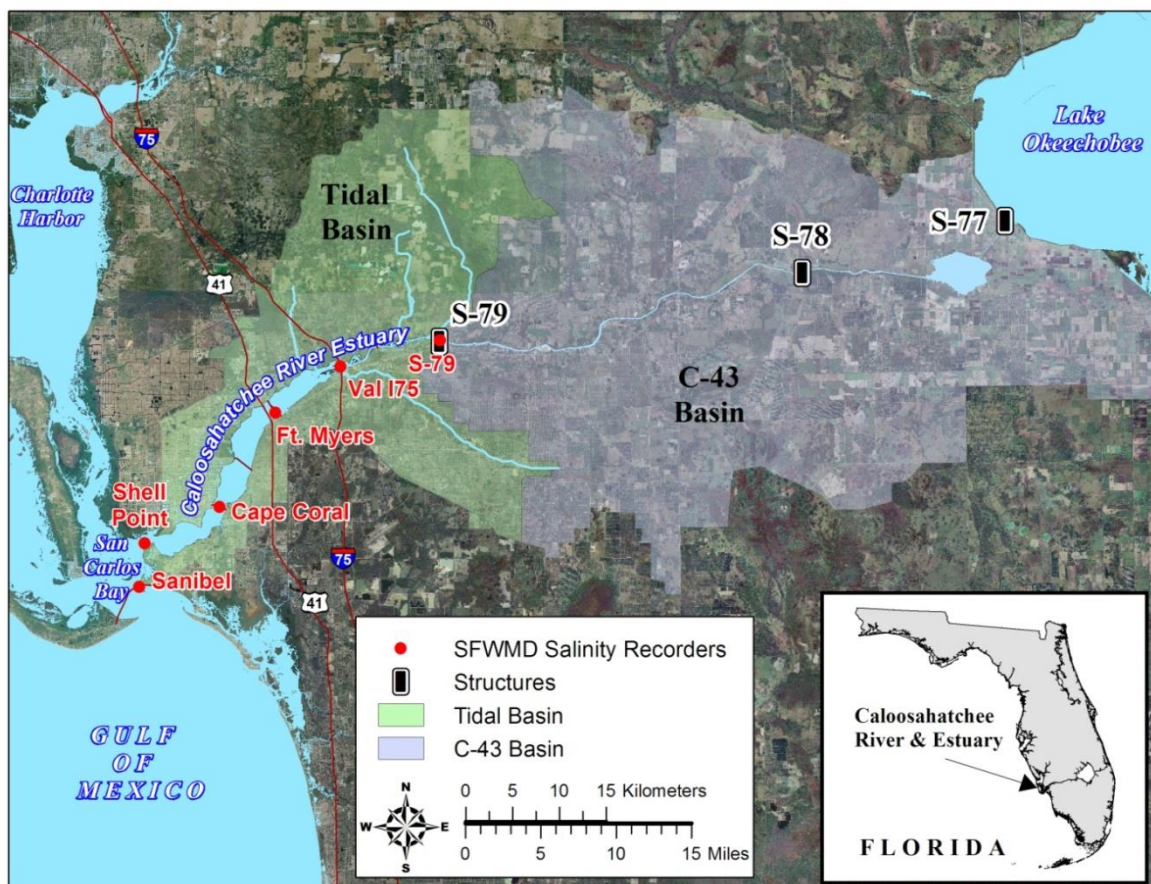


Figure 5. Basins, water control structures, and salinity monitoring for the Caloosahatchee Estuary.

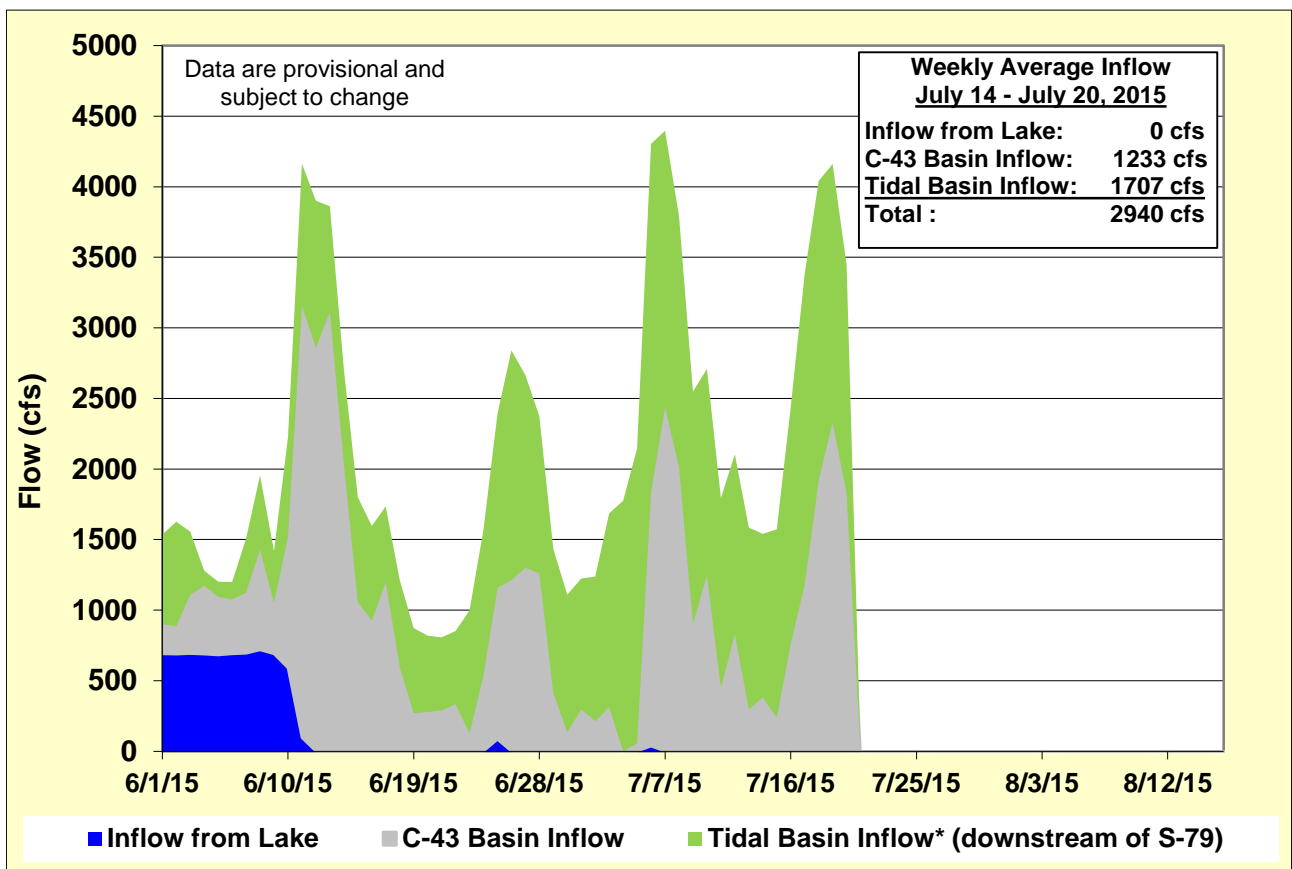
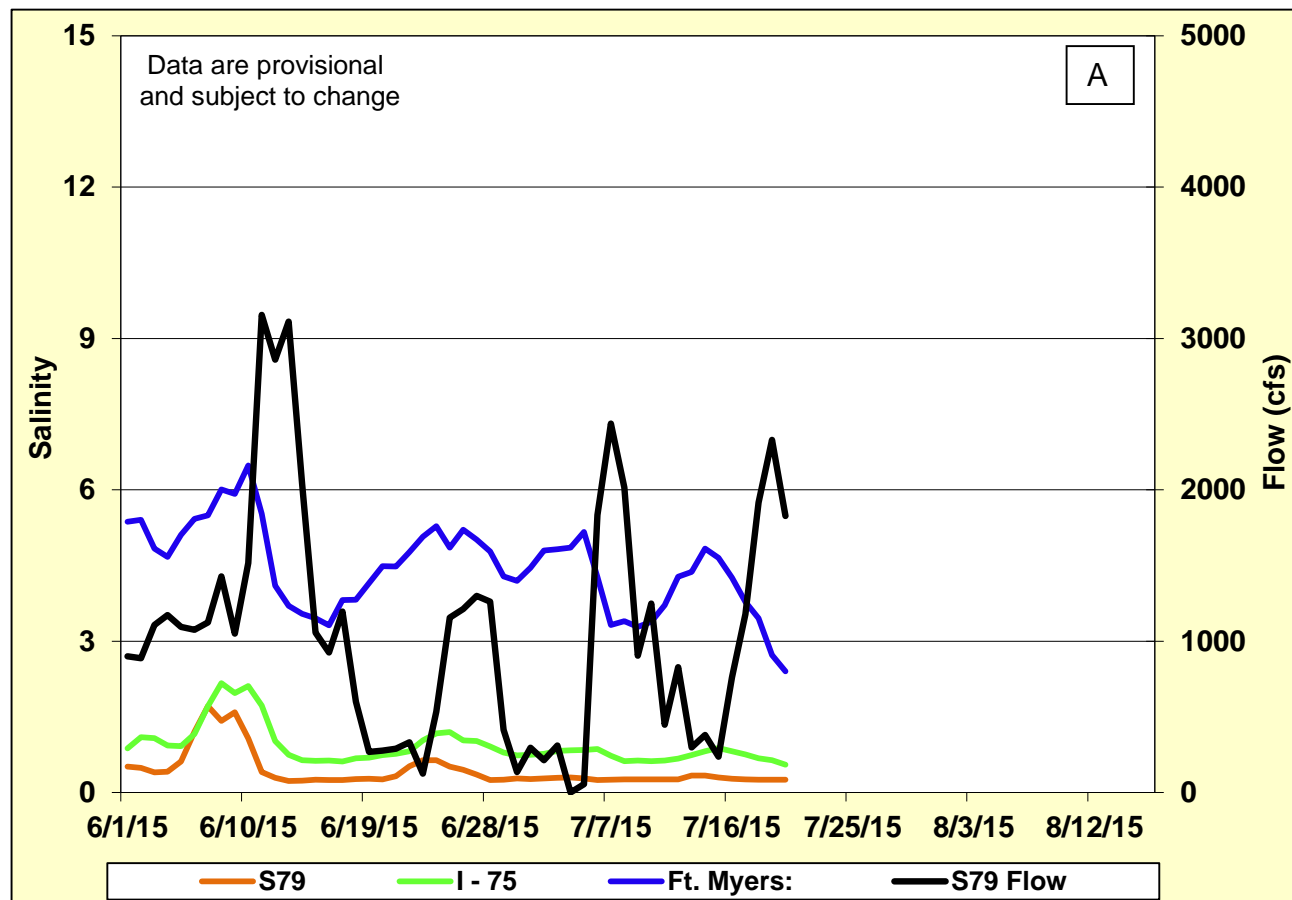


Figure 6. Surface freshwater inflows from Lake Okeechobee, runoff from the C-43 basin, and tributaries in the tidal basin into the Caloosahatchee River Estuary.



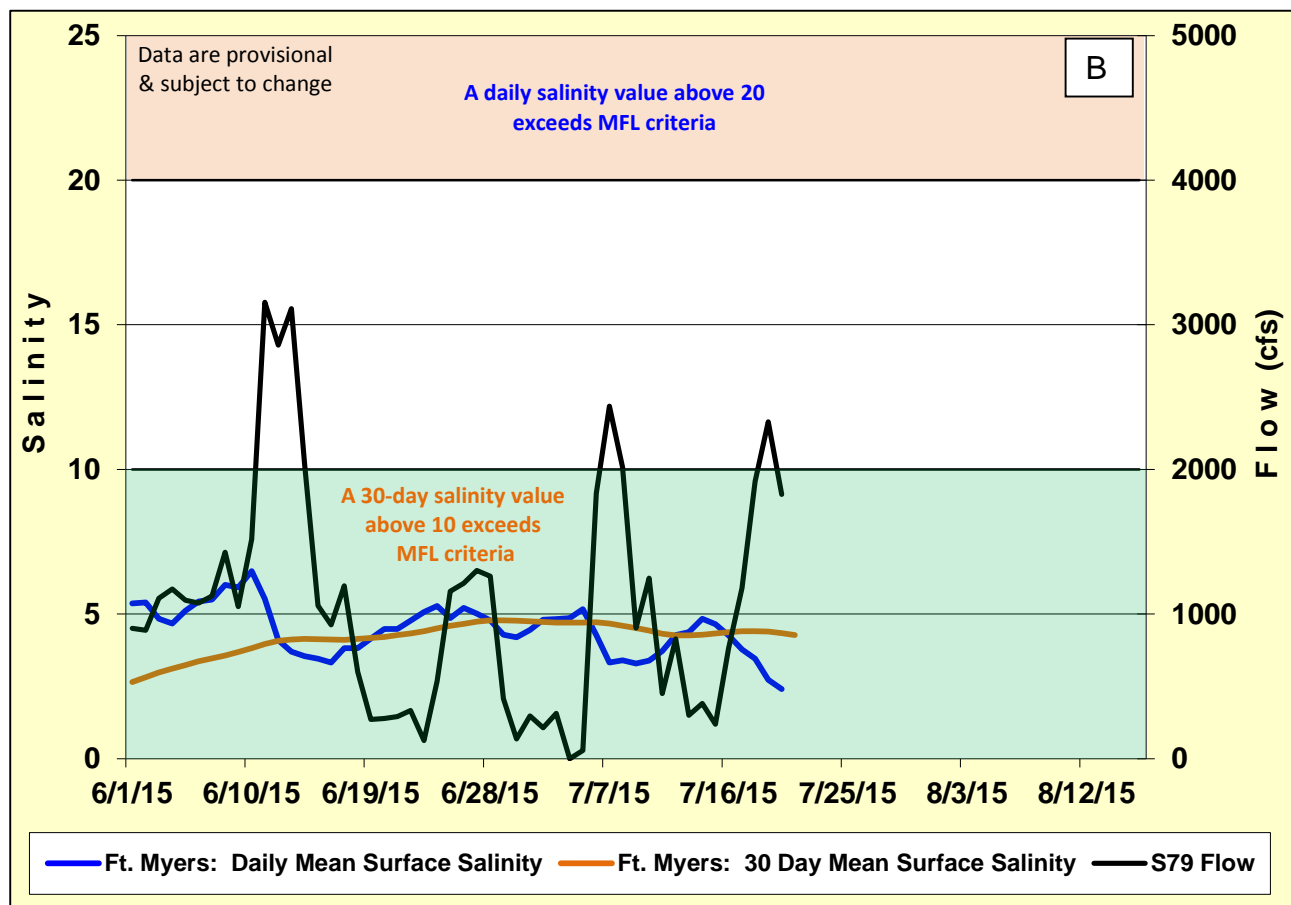


Figure 7. Daily mean flows at S-79 and salinity at upper estuary monitoring stations (A) and 30-day moving average salinity at Ft. Myers (B).

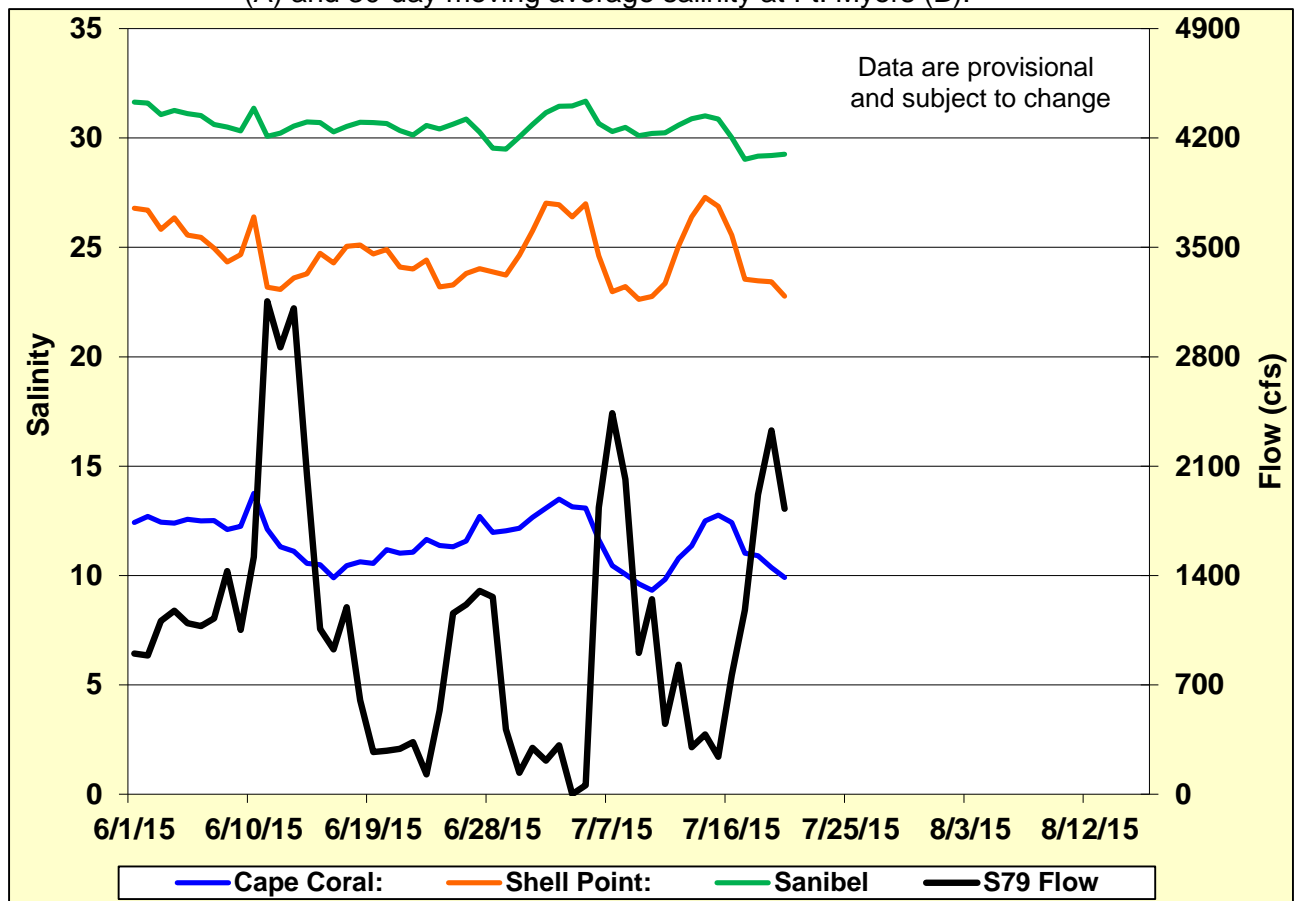


Figure 8. Daily mean flows at S-79 and salinity at lower estuary stations.

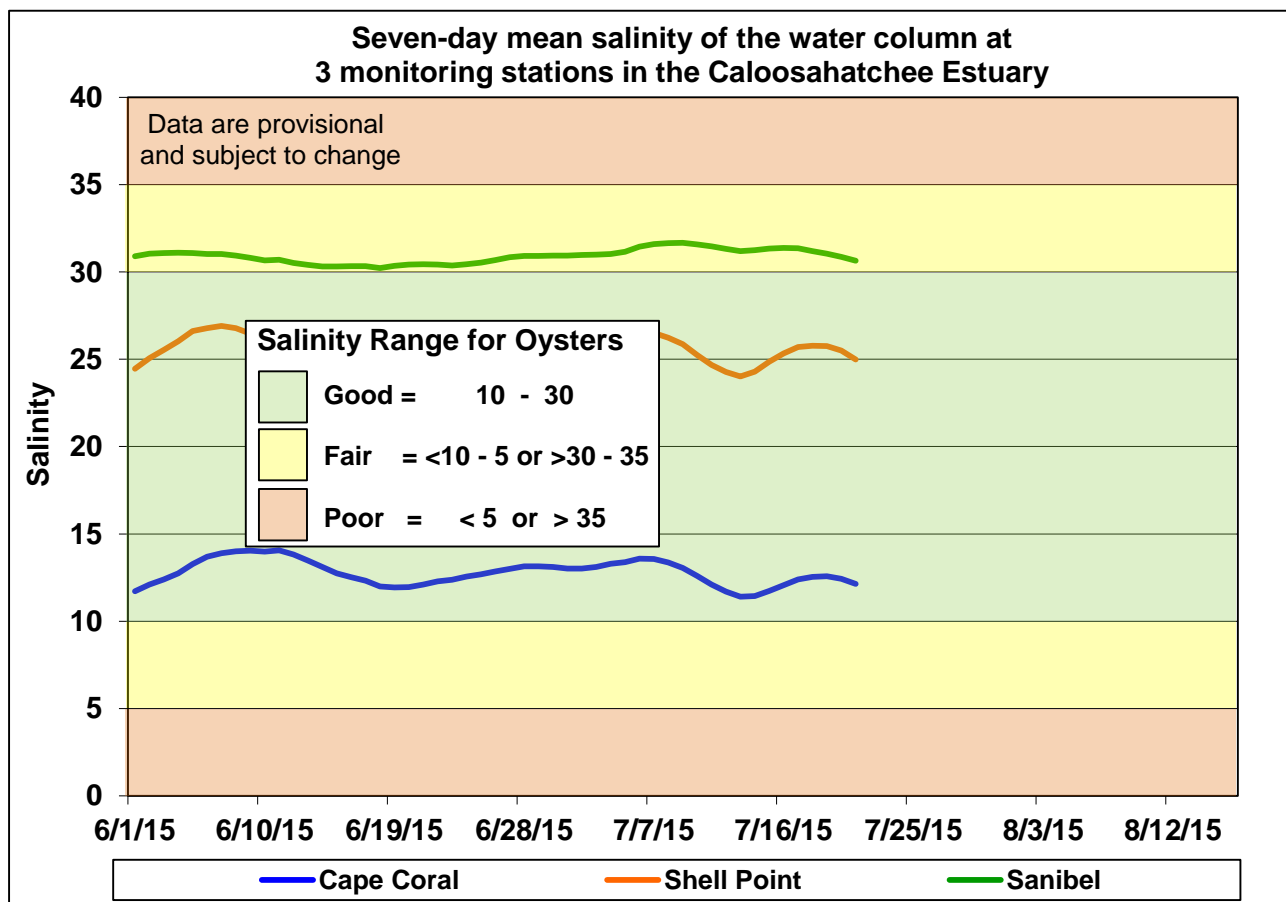


Figure 9. Seven-day mean salinity at Cape Coral Bridge, Shell Point and Sanibel Bridge monitoring stations.

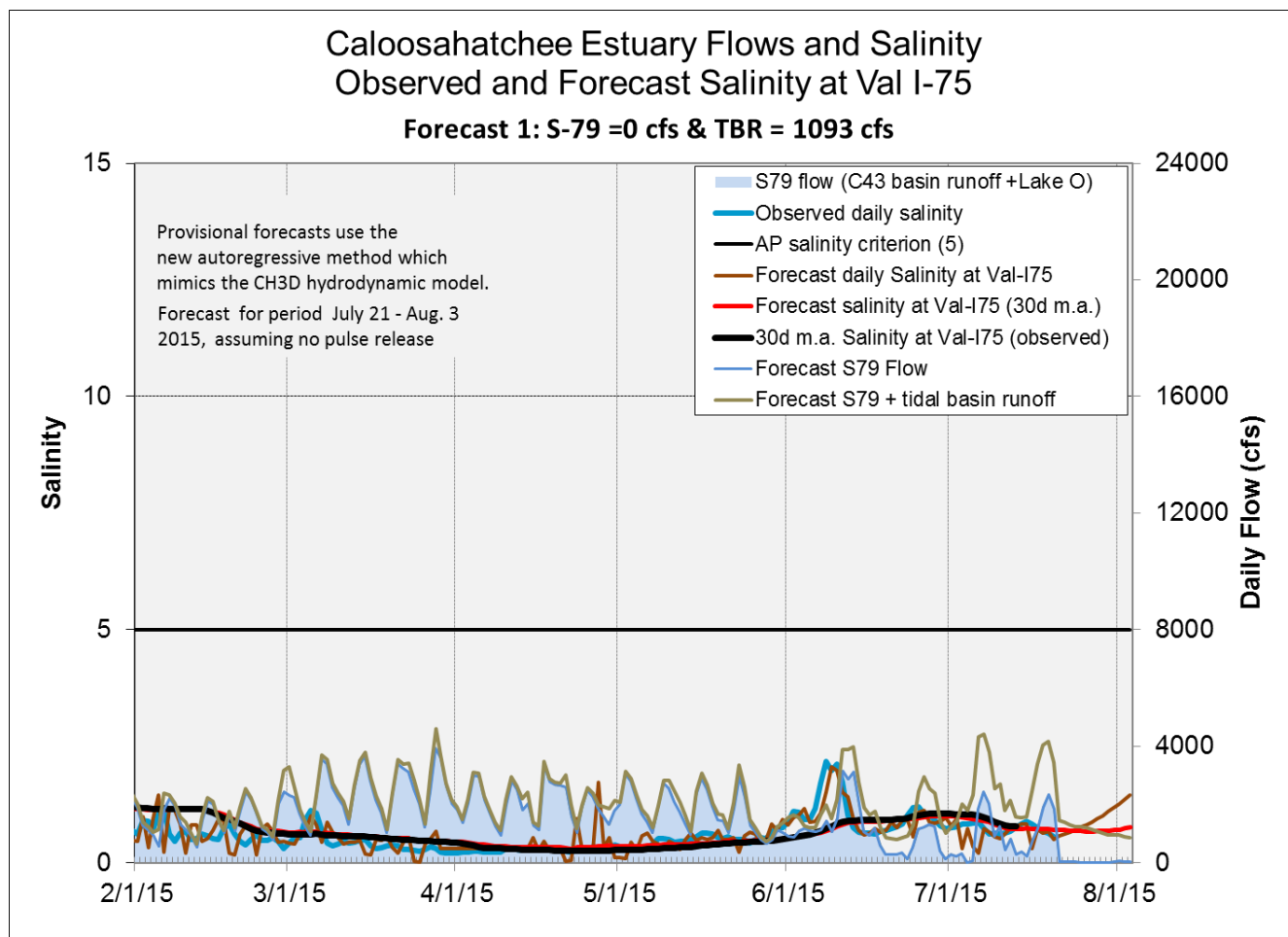
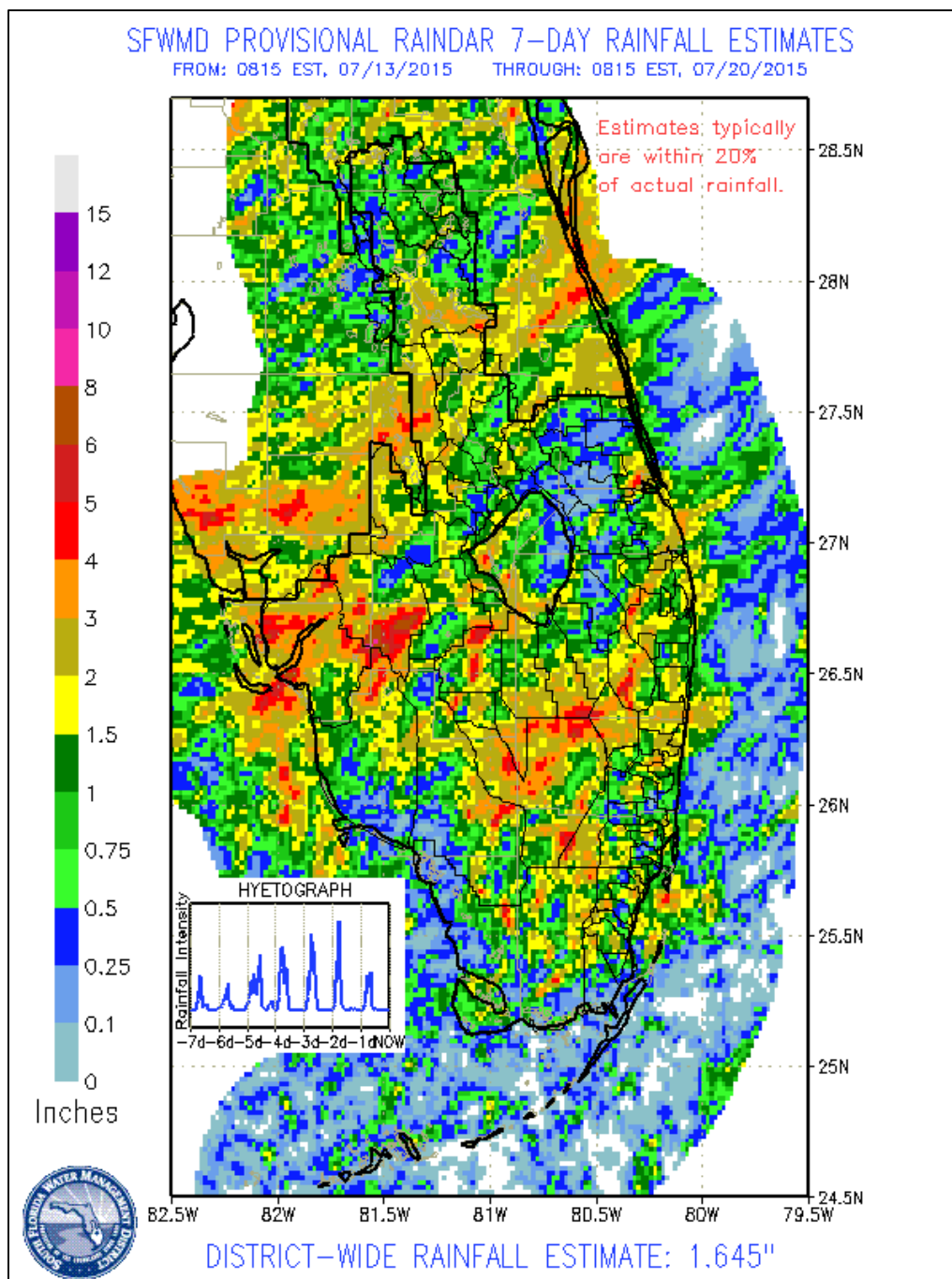


Figure 10. Two-Week Salinity Forecast for Caloosahatchee Val I-75 location assuming 0 cfs flow from S-79.

## **GREATER EVERGLADES**

Rainfall finally was relatively high this week with basin averages ranging from 1.03 inches to 2.86 inches and a basin maximum of 6.46 inches in WCA-3B. Stage changes were mixed, from a decline of -0.15 feet to an increase of 0.63 feet. Pan evaporation was 1.90 inches, very high at 33 percent above the 1.43-inch pre-project average.

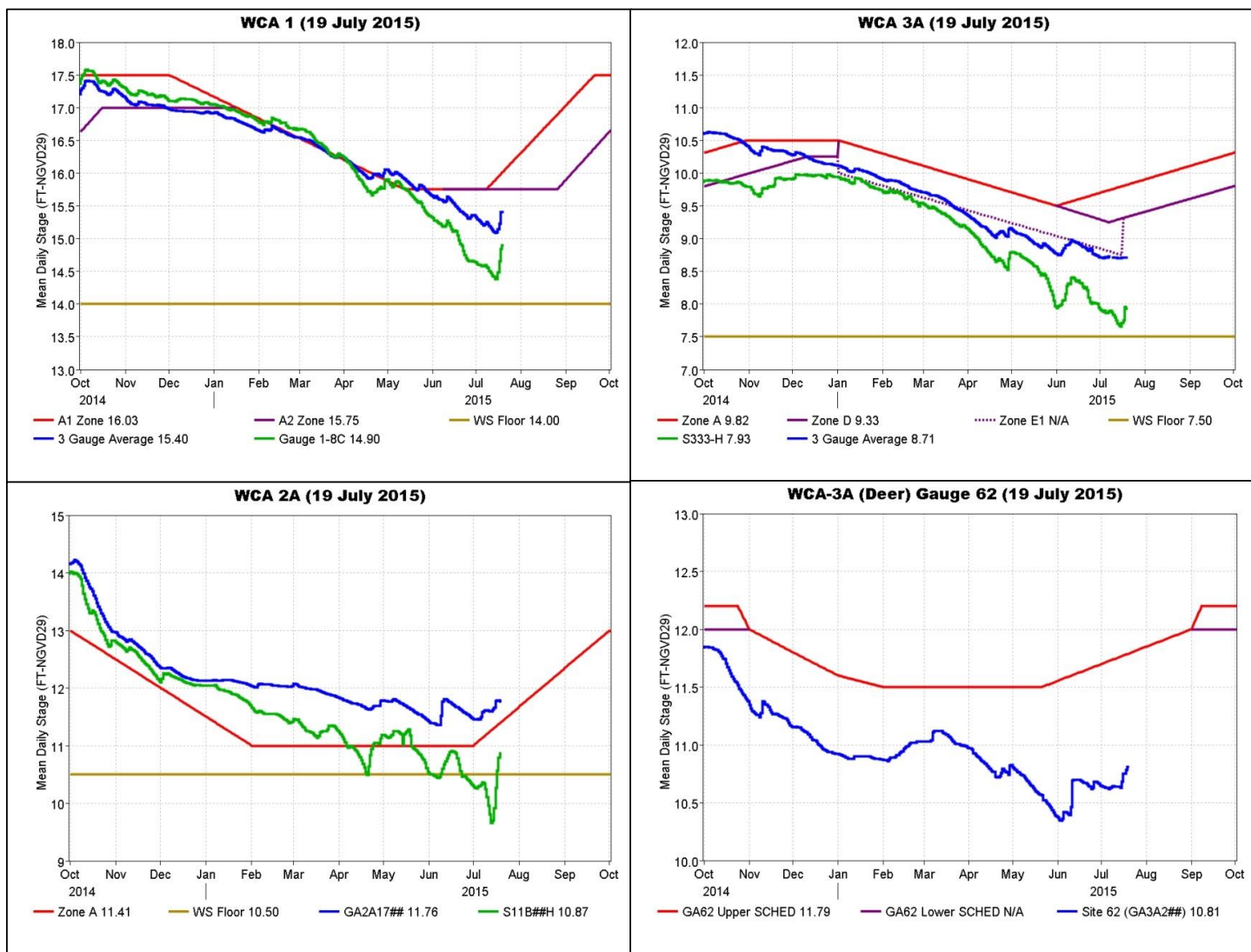
<b>Everglades Region</b>	<b>Rainfall (Inches)</b>	<b>Stage Change (feet)</b>
WCA-1	2.36	0.28
WCA-2A	2.86	0.16
WCA-2B	1.16	-0.15
WCA-3A	2.46	0.00
WCA-3B	2.22	0.19
ENP	1.03	0.63



### Regulation Schedules

Stage changes at gauges used for the regulation schedules rose last week. In WCA-1, the three-gauge average in the wetlands increased but remains 0.35 feet below Zone A2. The WCA-2A increased to 0.35 feet above schedule. In WCA-3A, the three-gauge average wetlands stage was almost constant and remains slightly below Zone E1. The water level at the northwestern WCA-3A gauge stage (gauge 62) rose rapidly to 1.02 feet below the upper regulation schedule.

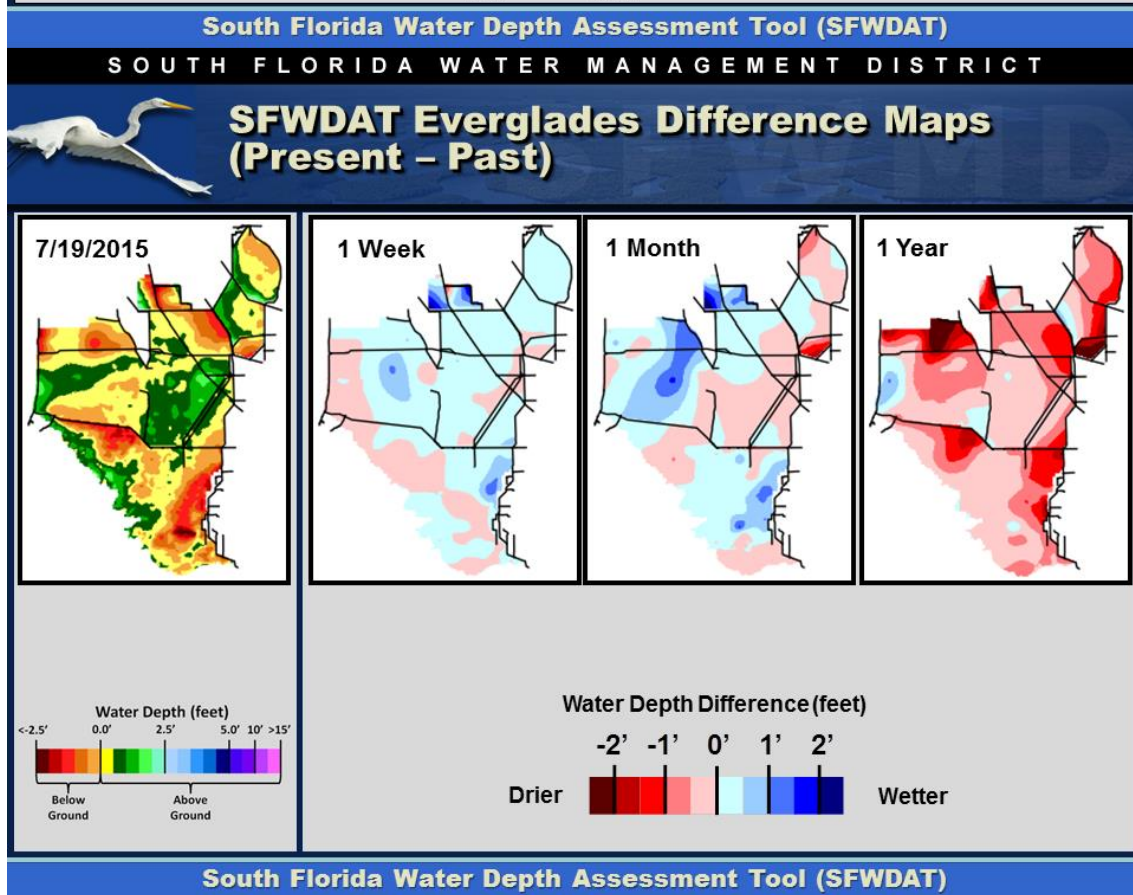
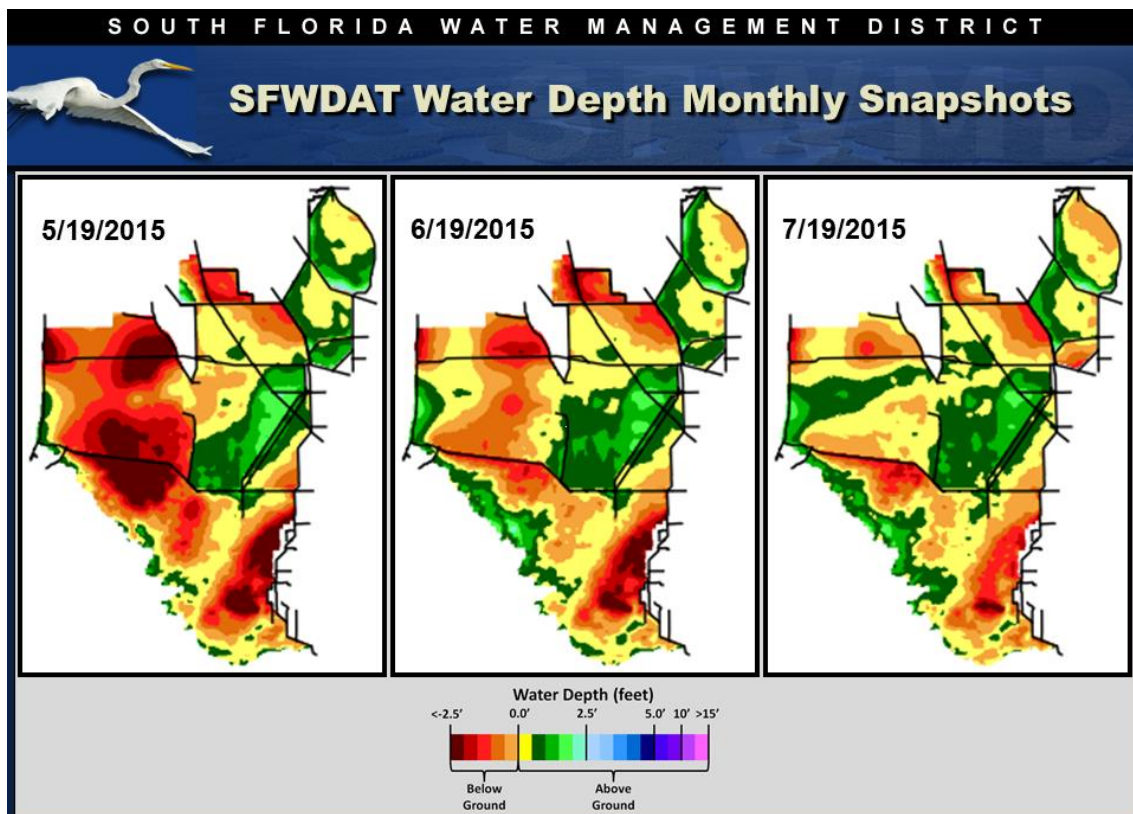




## Water Depths and Changes

Water levels are similar to or slightly higher than a month ago, and higher than two months ago. Low rainfall has produced unusually low water levels at this time of the wet season. Stages range from -1.53 feet or more (WCA-2B) to 0.95 feet (southern WCA-3A) at the monitored gauges. Northeastern WCA-3A is still -0.54 feet below ground.

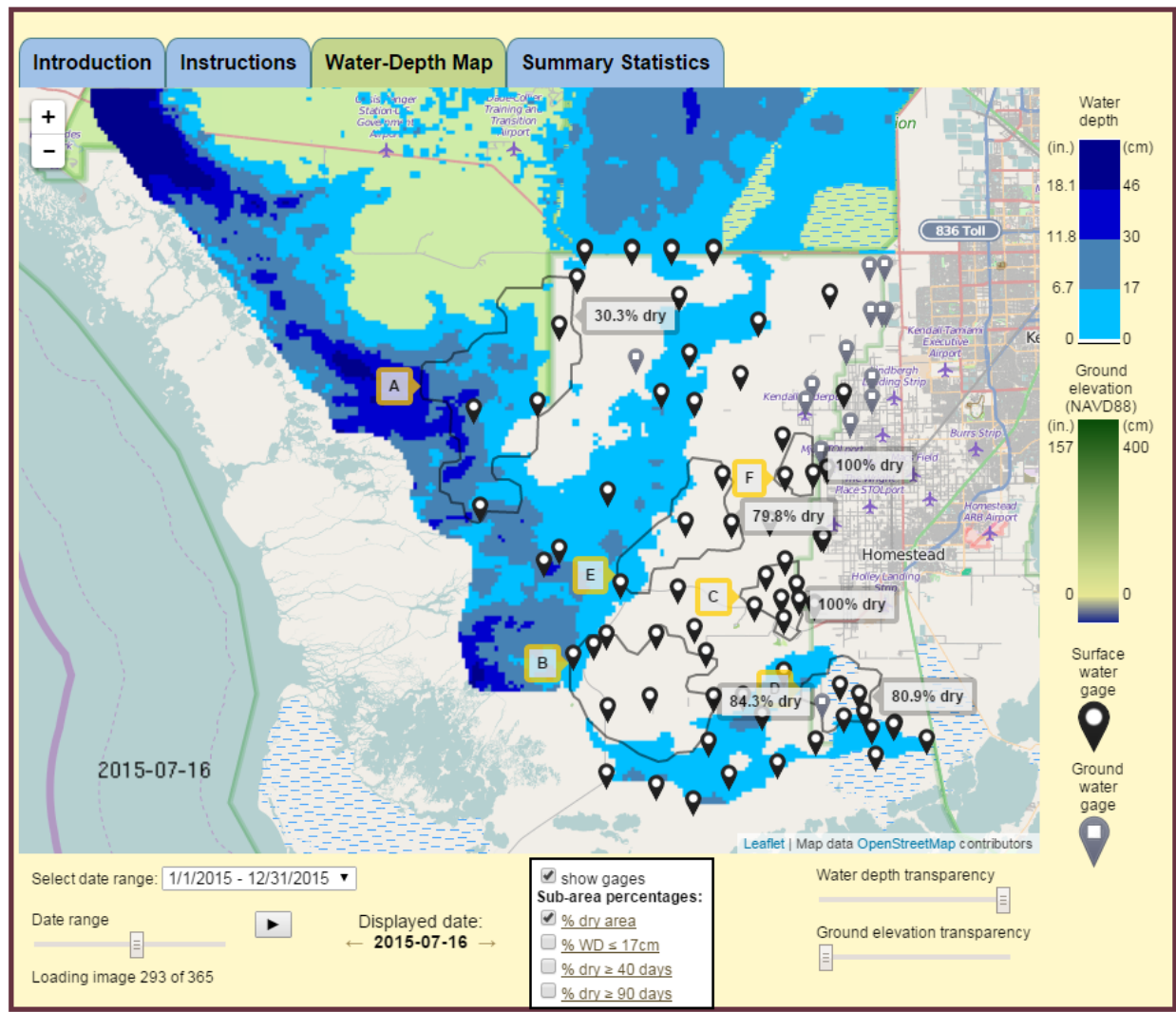
Stages are generally higher than last week, particularly in the Wildlife Management Areas and eastern ENP. Stages are mixed relative to a month ago and drier to much drier than a year ago. Stage changes ranged from -0.69 inches in WCA-2B to +0.15 inches in WCA-2A.



### Cape Sable Seaside Sparrow

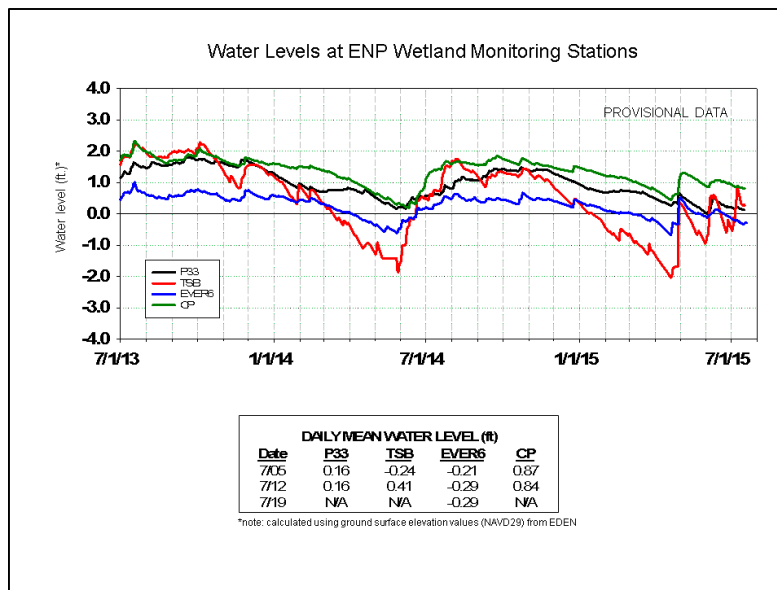
The breeding season is nearing its end, but there are five active nests remaining in Subpopulation A. Two of these had fledged successfully by July 10, and three additional nests are active, one with eggs and two with nestlings. One of the males has adopted a second mate whose own mate disappeared, and he appears to be supporting two nests. Soil there is moist but lacks standing water.

In Subpopulation B, many of the breeding pairs appear to be attempting third nests. Of eleven nests, three fledged two broods and eight others were unsuccessful. Scientists are banding juveniles. The area is 95 percent dry. Subpopulation D had an active nest that was lost to predation. Water levels are variable. The map below shows the percent of dry areas in each of the Cape Sable Seaside Sparrow subpopulations on July 16.



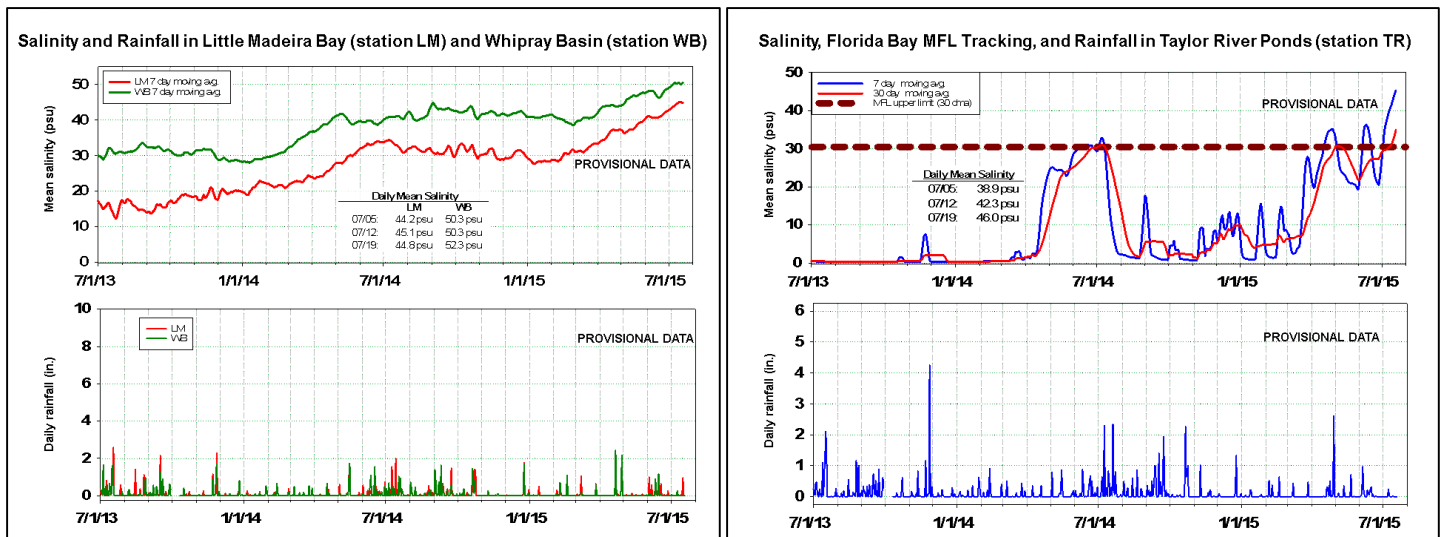
## Everglades National Park (ENP) and Florida Bay

While water levels usually rise at this time of year, they continue to recede and are still five to seven inches below average in Taylor Slough and the ENP panhandle. Water at the Taylor Slough Bridge site is above ground this week, which is necessary to start flows southward in Taylor Slough, but it lost half of its depth last week. If current recession rates continue, water will be below ground again next week.



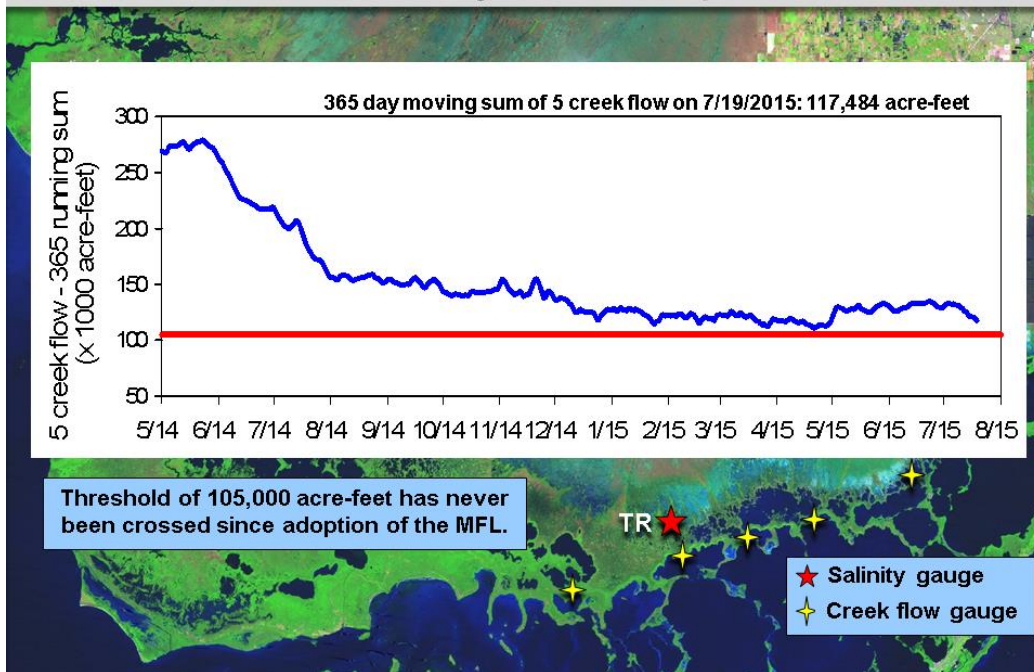
Florida Bay salinities remain 13 to 27 psu above average for this time of year. Salinities throughout Florida Bay are above 40 psu and exceed 50 psu in central Florida Bay and the central nearshore embayments. Upstream flows at the mouth of the creeks are moving hypersaline water inland, elevating salinity in the coastal ponds. The TR station (used for the Minimum Flows and Levels, MFL, for Florida Bay) experienced a large increase in salinity for the third week, raising the daily average salinity to 46.0 psu. In the wet season, salinities generally decrease but they have not so far, and the 30-day moving average of 34.9 psu is still increasing at TR.

The 365-day running sum of the cumulative flow from five creeks feeding Florida Bay decreased to 117,484 acre-feet on July 19. While this flow is higher than the minimum set in the Florida Bay MFL, it represents a large decrease from last week and is similar to May's flows.





# Florida Bay Flow Update



## Water Management Recommendations

- We recommend targeting ascension rates of up to 0.25 feet per week (or 0.5 feet over two weeks to allow for large rain events) throughout the wet season to meet the end of wet season stage targets for environmental needs (prey species support, peat, and plant community needs).
- We continue to recommend releases into northeastern WCA-3A while conditions are very dry. Once water levels rise above ground, additional releases should no longer be needed.
- To protect the breeding Cape Sable Seaside Sparrows in Subpopulation A, S-12A and S-12B should remain closed until all breeding is complete. Sparrows in subpopulation A are still actively nesting.

Site-specific recommendations appear in the summary table below. The red text represents new or modified information or recommendations.

## Summary of Everglades Recommendations, July 21, 2015 (SFWMD) (red is new text)

Area	Current Condition	Cause(s)	Recommendation	Reasons
<b>WCA-1</b>	Stages rose from 0.13' to 0.44'	Rainfall, ET, management	Follow WRS, targeting rainfall driven marsh stages at the top of Zone A2. Ascension rates up to 0.25 ft/wk, or 0.5 ft/14 days, are recommended.	Promote native habitat and maintain wetland plant communities. Moderate ascension rates to protect habitats and sensitive species, but also to allow taking advantage of rain events.
<b>WCA-2A</b>	Stage increased 0.16'. Currently at 11.75' NGVD	Rainfall, ET, management	Ascension rates up to 0.25 ft/wk, or 0.5 ft/14 days, are recommended. High season target stage of 13 ft NGVD at 2-17 on Oct 1	Promote native habitat and maintain wetland plant communities. Moderate ascension rates to protect habitats and sensitive species, but also to allow taking advantage of rain events.
<b>WCA-2B</b>	Stage decreased -0.15'; Gauge EDEN-13 is dry	Rainfall, ET, management	Ascension rates up to 0.25 ft/wk, or 0.5 ft/14 days, are recommended.	High stages preclude wading bird use, but provide good habitat for ducks.
<b>WCA-3A NE</b>	Stage increased 0.02'; gauge 63 is -0.54' below ground	Rainfall, ET, management	<b>Releases into far NE 3A are strongly recommended to protect peat and wetland ecosystems until water levels are above ground again.</b> Average water stage of gauges 62 and 63 should remain under 11.60 feet. Ascension rates up to 0.25 ft/wk, or 0.5 ft/14 days, are recommended.	Promote native habitat and maintain wetland plant communities. Moderate ascension rates to protect habitats and sensitive species in 3A, and also to allow taking advantage of rain events.
<b>WCA-3A NW</b>	Stage increased 0.17' and is 0.71' above ground	Rainfall, ET, management		
<b>Central WCA-3A S</b>	Stage decreased -0.02'	Rainfall, ET, management	Manage 3AVG in Zone A until Aug 15 or as long as possible. Target wet season high stages (10.67 3AVG) by Oct 30. Ascension rates up to 0.25 ft/wk, or 0.5 ft/14 days, are recommended.	Promote native habitat and maintain wetland plant communities. Moderate ascension rates to protect habitats and sensitive species in 3A, and also to allow taking advantage of rain events. Also to facilitate avoiding or minimizing discharge through S-12A and S-12B at least through August 15 and as long as possible to benefit Cape Sable seaside sparrow nesting and habitat conditions.
<b>Southern WCA-3A S</b>	Stage decreased -0.16'	Rainfall, ET, management		
<b>WCA-3B</b>	Stage changes ranged from -0.02' to +0.49'	Rainfall, ET, management	Ascension rates up to 0.25 ft/wk, or 0.5 ft/14 days, are recommended.	Promote native habitat and maintain wetland plant communities. Provide foraging habitat for wading birds.
<b>ENP-SRS</b>	Stage rose by 0.63' to ground level	ET, rainfall, topography, management	Discharges to the Park should be made in accordance with the ERTF rainfall plan. Water deliveries to Shark Slough should be made through S-333, then through S-12D and S-12C.	Promote native habitat and maintain wetland plant communities.
<b>ENP-CSSS habitats</b>	Nesting continues because of dry conditions in subpops A, B, possibly D.	Rainfall, ET, management	Follow ERTF schedule closures and closure plan for Frog Pond and Aerojet structures, and continue to monitor trigger levels. Manage 332 B, C, and D impoundments to avoid exacerbating above ground level water levels in adjoining marsh areas with sparrow breeding. Extend gate closures for S-12A and S-12B until end of nesting.	<b>Provide habitat and appropriate nesting conditions for CSSS.</b>
<b>Taylor Slough</b>	Dry. 5-7inches below average.	Rain, ET, inflows	Move water southward as possible	Provide freshwater buffer for ecosystems and freshen saline conditions downstream
<b>FB- Salinity</b>	Hypersaline. Still 13-27 psu above average	Rain, ET, inflows, wind.	Move water southward as possible	Southward flows are still needed to reverse/slow salinity increases